WATER MANAGEMENT IN ALBERTA

SUMMARY OF PUBLIC COMMENTS
JULY TO DECEMBER 1991

Alberta
ENVIRONMENT
ENVIRONMENT COUNCIL OF ALBERTA
WATER RESOURCES COMMISSION

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Minister's Message

In July 1991, the Alberta Government initiated a process to review the province's water management policies and legislation, with the distribution of the Discussion Paper, "Water Management in Alberta -- Challenges for the Future". Alberta Environment, the Alberta Water Resources Commission and the Environment Council of Alberta have been cooperating to ensure that there are opportunities for the public to participate in this important initiative.

This report summarizes the comments and suggestions that have been received during the public consultation program from July 1991 to December 1991. This information is now being used by the Government to prepare a policy guide and draft legislation, for release later this year. There will then be further opportunity for public review and comment.

This report contains many valuable perspectives on water management in Alberta. We appreciate the efforts you have made and encourage you to continue to participate. Together, Albertans can ensure that our water resources are managed wisely, now and into the future.

RALPH P. KLEIN

Introduction

(how public input was solicited, received and used)

In 1991, Alberta Environment, the Alberta Water Resources Commission, and the Environment Council of Alberta formed a partnership to assist the public in expressing its views and concerns on water management in Alberta. Each of these agencies has a different role in managing this resource: Alberta Environment is responsible for water management in the province, including the administration of the legislation and regulations; the Alberta Water Resources Commission provides the government with advice on water management policy and issues; and the Environment Council of Alberta advises the government on broader environmental policy and issues.

In July of 1991, Alberta Environment released the document "Water Management in Alberta--Challenges for the Future." The document explains why the government is reviewing its water management policies and legislation, and highlights the important issues. More detailed information on water management was made available in 12 background papers. The public was notified of the review process by the distribution of 25,000 brochures and through advertisements in newspapers across Alberta. In response, interested members of the public requested and received over 12,000 copies of "Water Management in Alberta--Challenges for the Future" and more than 3,500 sets of background papers.

The "Water Management in Alberta--Challenges For The Future" document also asked the public for their views on the future management of our water resources. Throughout the fall of 1991, Albertans responded by telephone, by letter, or by sending formal submissions to Alberta Environment. In addition, to gain a wide sample of opinion, the government sent a survey to approximately 6,000 randomly chosen households asking occupants about their knowledge of water management practices. As well, the Alberta Water Resources Commission, on behalf of the three agencies, hosted open houses and workshops in 16 centres throughout Alberta.

Overall, more than 200 submissions were received from individuals, interest groups, and organizations representing a broad cross-section of Albertans from environmental groups, municipalities, the energy and forestry industries, irrigation and livestock farmers, and many others. More than 1000 people attended the open houses and participated in workshops.

By December 31, 1991, the first phase of the public involvement process for the Water Management Policy and Legislation Review was completed. All comments received during the public consultation process were coded and sorted into general issue categories.

To compile this summary of public comments, the transcripts of all workshops, and all letters and submissions received up to January 15, 1992, were reviewed. Although any letters or submissions received after January 15th are not included in this document, they will be considered as much as possible in the preparation of policy and legislation. All comments will be considered as the review process moves forward into Phase 2.

This summary document groups the public's comments into nine sections. Each section attempts to illustrate the variety of public comments. In each section, comments are grouped into subsections that represent important topics to the public. In a short document like this one, not all comments can be included, but representative examples highlight the main points of view on the issues. Sometimes comments are chosen because they represent a unique perspective. Quotes used in the report are taken directly from the written submissions, open house questionnaires, and transcripts of workshop discussions.

This report also includes a summary of the results of the survey of 6,000 households, and a summary of the "Water Policy Futures Workshop" held by the Environment Council of Alberta. The survey provided valuable information for designing the subsequent public consultation process. The "Futures" workshop brought together national and international experts in water management to discuss water-related issues affecting Alberta. The workshop transcripts offered a useful perspective.

Later this year, Alberta Environment will release a policy guide and a discussion draft of legislation and regulations, for public review and comments. Public workshops will be held to discuss this new material. The intent is to introduce new legislation in the Legislative Assembly of Alberta in 1993.

Water Management Policy & Legislation Review

OVERVIEW OF COMMENTS

The magnitude of the response to the review of Alberta's Water Management Policy and Legislation was impressive, showing how strongly Albertans feel about water and its protection. The review process received positive comments, criticism, and suggestions on how to do a better job in the future.

YOUR COMMENTS

The following positive comments show public appreciation for the Water Management Policy and Legislation Review:

- The Minister and Alberta Environment were congratulated for initiating the review, and for "producing a number of generally well written and highly readable documents in support of this process." The process was "good" and "thorough"; it "provided sufficient mechanism for public inputs"; workshops were "interesting," "informative," and a "valuable exercise" in that they "allowed participants to express their concerns and ideas in an informal setting." "Workshops allowed some dialogue between individuals with radically different opinions as to how water is viewed and used in the Province."

- Alberta Environment was thanked "for the opportunity to participate in this important revision of key legislation"; and for the "opportunity to comment on this crucial natural resource."

- The "excellent series of questions in WATER MANAGEMENT IN ALBERTA: CHALLENGES FOR THE FUTURE" was commended.

- The "initiative to involve the general public in the policy development process for managing this very valuable resource" was applauded.

Several criticisms were levelled at the review process:

- The main one was the time allotted for the Review. "The whole process is being rushed through, and as a result may be so flawed as to be almost useless." "The timeframe of the meeting [Edmonton] was far too condensed." "The open house

component of the day could have been shortened to an hour, and the dialogue component could then have been expanded [Edmonton]."

- "City people and environmentalists will overwhelm agricultural concerns and the program development will favour the former because that is where the votes are."

- Some groups have more "political and lobbying power" than others. "In many cases, it is the same individual saying the same thing at a number of workshops, an option not available to others with limited time and financial resources."

- Do not take a "statistical approach to evaluate the importance of specific areas."

- A few participants found the wording of the open house questionnaires was not specific enough or "too general for a simple agree or disagree."

- Some described the review process as "a plasticized process by which the government can claim that they have solicited and received public input which received due consideration in its legislation."

The public offered many suggestions and made many requests. The following is a broad sampling of such comments:

- Many felt that the process for the review should be changed. The primary concerns expressed were that the public should be involved in designing the process; there should be multi-stakeholder participation in issue identification; that stakeholders should also be "integrally involved in negotiations about solutions"; and that there should be accountability by the government for the decisions that are made.

- Some suggested that independent consultants should "review what has and what has not worked, and make recommendations on 'state-of-the-art- processes for the review of the WRA [Water Resources Act]." The Clean Air Strategy for Alberta (CASA) model was given as an example of a successful process.

- "Create a multi-stakeholder advisory group with the responsibilities to draft the vision statement from the accumulated comments, to guide future public consultation, and to draft new legislation."

- "Stakeholders need to be involved in the drafting of amended legislation, rather than commenting or reacting to legislation drafted internally within the government."

- "While there may be some merit in 'writing' new legislation to meet future needs, the Province should not ignore the positive results that can be achieved through 'amendments' to legislation."

- The opposite view said, "I think it would be a good idea to regroup all resources under the Department of the Environment and rewrite all antiquated legislation.

- "The Province should be prepared to extend the time period for the review of the Water Resources Act, in order to ensure that the decisions reached regarding any potential legislative changes will have the highest chance for success." "Make sure that enough time is given for a more complex understanding of both the present, as well as the future needs for water legislation."

- "The opportunity should be provided for continuing public input into this process." "Written submissions on the W.R.A. [Water Resources Act] must be public documents. We request public hearings after the draft legislation has been prepared."

- "Alberta Environment should make an effort to get newspapers to run articles on issues related to the Review."

- There are implementation tools other than legislation that should be given equal consideration, some people said. [These] "include information, education, persuasion, research and technology development, and economic instruments. Focusing on legislation at this stage in the dialogue may narrow the discussion prematurely and limit opportunities for creative management options."

- Support was expressed for a "consistent one-window approach for all possible parties affected" by water management decisions.

Water Resource Planning and Decision Making

OVERVIEW OF PUBLIC COMMENTS

Of all topics discussed during the public review of water management policy and legislation, this one generated the largest number of responses. Nearly everyone had something to say in this regard, questioning or criticizing the existing processes, expressing concerns, suggesting how things should be done, or making various demands of government. The message from all these comments is clear: to be able to achieve the protection, preservation, and wise use of our water resource, we must have a good water management strategy in place. Such a strategy includes better planning and decision-making, more and better use of science and technology, better use of advanced research techniques, more comprehensive monitoring, and improved data collection. Participants felt that this strategy must also include openness with the public and more public participation in water management. This new strategy, respondents said, must be confirmed by new water policy and legislation.

YOUR COMMENTS

Planning

Respondents said they would like to see long-term planning provided in the Water Resources Act in order to set long-term goals for long-term use. The government's true commitment to long-range planning would ensure our "self-sufficiency and an adequate and pure water supply in the future." As well, many felt that planning for water use should be done in co-ordination with other resource management practices, particularly those in land and forests. The planning process should assist in limiting or removing the potential for "ad hoc" decision-making. Participants suggested various guiding principles and/or objectives for the new water strategy in Alberta.

Many people expressed the view that management of water in Alberta should be conducted on a river basin basis:

- "River basin planning is the logical basis for water management decisions."
- "All rivers in the Province should be subject to a river basin plan. This will allow focus on water needs now and in the future."

- "River basin plans should have legal status."
- "Long-term river basin plans at sub-basins should reflect regional needs."

Water quality and quantity should be the key criteria for river basin planning, the participants argued:

- "Planning decisions in watersheds should account for downstream impacts."
- "Implement measures to protect natural flow regimes and water quality, so that upstream activities and developments do not affect downstream reaches and vice versa."
- "Plan now, so future diversions do not result in lower quality of instream flows."
- "Any activity that possibly impacts water quality and quantity needs to be examined before approval for that activity is granted."

People expressed a desire to see consumptive and destructive uses limited by strong principles:

- "The protection of natural ecosystems should be the highest priority use."
- "Put priority on uses that are sustainable."
- "The objective should be to reduce demands on our overtaxed streams and groundwater resources. Water conservation has to be one of the major initiatives in this regard."
- "Protecting our water resources in a natural state is a higher priority than filling the requests of water users."

Suggestions were made to integrate all land use/resource plans into river basin plans:

- "Land and water should be managed as a system."
- "It is impossible to manage waters without dealing with the management of lands draining to them. Quick fixes involving dikes, dams, etc. will not provide

long-term solutions to problems caused by silting, rapid run-off, etc. caused by land-use management practices."

- "The co-ordination of land and water planning is needed NOW, not in the future."

- "Legislation and regulations should reflect the close relationship between land use in a river basin and the health of the river itself."

People felt that a new water strategy must evaluate environmental, social, and economic costs and benefits:

- "The current planning process is flawed because economies appear to favour the control of water. The result is drainage, flood control programs, and water storage that are both inefficient and costly to maintain and develop."

- "Short-term economic benefits should not outweigh long-term water management."

- "Proper planning and care for the environment makes the best economic sense."

Several participants expressed the view that the process of evaluating water strategies should consider the possibility of risk in committing to a course of action.

- "The recognition of the risk attached to any water management plan, as well as uncertainty inherent in all data and projections, must be included in decision-making."

- "Many structural solutions are costly, and commit the Province to a certain way of managing water resources. As such, they eliminate the possibility of many other management strategies in the future."

A concern that all stakeholders take part in the planning was expressed:

- "Our entire civilization relies on water and all stakeholders MUST take part in planning."

- "Planning should make use of processes and technology that would allow for stakeholders and other interested individuals to participate in planning and water use priority selection in a co-operative basis."

- "Planning for activities which do not require a licence or permit under the Water Resources Act, but which may have a negative impact on the ecosystem, must be integrated with water resource planning."

When planning is incomplete, there should be a set of guidelines available that will assure compliance with policy. Another suggestion was the following:

- "There should be a moratorium placed on major developments in basins where planning has not been completed."

The management of water in drought years or under emergency conditions should be part of the basin plan and be given legal status.

- "There is a need for a rational plan for a water body [local, regional] that prevents conflict in times of shortage."

- "The steps that will be taken to share water in drought conditions need to be defined."

- "Methods of managing water during shortages should include: (1) good records of all users, (2) good data base, flow records, return flows, diversion needs, (3) administrative procedure to allow negotiation of water sharing, (4) voluntary sharing."

Planning for the Future

People showed great concern for the protection and preservation of our water resources for future generations. Planning for the future meant to participants the creation of a long-term conservation strategy that will secure a future supply of clean water to Alberta. Participants realized such planning is not an easy task, and "no single solution will meet current and future needs." Planning for the future requires an integrated approach which has a much higher chance of long-term success than "some of the narrow conservation approaches that have been promoted in the past."

- "Water should be held in trust for current and future Albertans. In making economic decisions, we must consider environmental sustainability."

- "Determine how these fixed resources can be used indefinitely without degrading either the quality or the quantity, and yet meet expanding needs and wants."

- "We have to think long-term. No one owns our water. We are all stewards as well as users."
- "We should strike a balance between water uses and safeguarding future supplies."
- "The focus of the Act should shift to sustainability of the water resources for present and future generations."
- "What is needed is a strategic conservation plan to set objectives that all agencies must work towards and justify their programs against."
- "Why not call on everyday Albertans from every walk of life and every philosophical perspective to create a strategic conservation plan for Alberta?"
- "Plan for the future--do not close sluice gate after the water goes by."
- "Water conservation has to be one of the major initiatives in the planning process."
- "All departments that have anything to do with water licences must work together. The future water supply must be one of the most important issues."
- "If conservation issues are not discussed in an integrated fashion, Albertans may find that the costs relative to the savings may be difficult to justify."
- "Development which is unsustainable without large transfers of water should not be encouraged at the expense of the environment."
- "We urge the Government of Alberta to move into the forefront of environmental protection. Develop policy and legislation which will ensure that the recreational enjoyment and heritage that Alberta's rivers hold will be saved for generations to come."

Decision-making

Participants were concerned about how water management decisions will be made and asked:

- "How can conflicting demands of a fixed resource be accommodated?"
- "How do we sort actual needs from perceived needs?"
- "How are priorities set for water use?"
- "What are the criteria for priority?"
- "Who will make these decisions?"
- "Who would be the judge of the full and efficient use of the waters in any major basin?"

Participants' comments suggested some general principles for making water management decisions:

- "Management decisions must be based on complete understanding of the function of water in an ecosystem, and the recognition of complexity in water uses."
- "The guiding principle for the provincial government, as a trustee, must be sustainability of the water resource."
- "Decision-making and water allocation should be made on an ecological basis (i.e., IFN)."
- "Management decisions should be based on scientific information, including historical data from other similar river basins. This information needs to be credible and understandable to the public."
- "Social, economic and environmental factors/effects must be considered in water management decisions, and balanced for the protection of water resources."
- "Water management decisions should be based on river basin plans."
- "The allocation of water based on a Basin Plan, along with the appropriate amending and appeal procedures, should be given a legal basis."
- "Legislation should specifically outline decision-making processes and clear guidelines for determining allocation and priorities of use."

- "Decision-making must be more regionalized to reflect the variations in water resource issues and concerns across the Province."

- "The reallocation and allocation decisions must be made on a regional basis."

- "Land impacts should be part of decision-making related to surface and groundwater (e.g., deterioration of the Athabasca delta)."

- "A full assessment of impacts must be done before decisions are made."

A number of participants were concerned about the "multiple use" concept in decision-making:

- "In the past, the emphasis in water management plans and multiple-use decisions has always been a 'human needs and wants' approach. Ecosystem health must be given equal weight with human needs and wants. Good management is essential--need to balance ecosystem protection with use of water, to protect ecosystem integrity as much as possible while also satisfying social and economic needs in the wise use of water."

- "Multiple use of all rivers in Alberta does not work because some uses are incompatible with others. The Province should put a moratorium on allocating more water, except for municipal and domestic purposes, until instream flow requirements have been determined and protected."

- " 'Multiple use' is an abused concept."

- "Multiple uses of water resources should list, as a priority use, the requirements of resident flora and fauna to maintain healthy and adequate habitat."

Many participants had suggestions of what they felt were the requirements of a competent decision-making process:

- "The process must be objective, open and credible."

- "No back room deals."

- "Key stakeholders must be ensured of the opportunity to identify key issues as well as be integrally involved in negotiations about solutions."

- "Decisions should be based on impartial reviews."

- "Allow flexibility in decisions such that long-term objectives are re-evaluated as requirements of the economy may change."

- "How are priorities set, who decides, what are the criteria for priorities and use--must be clearly laid out."

- "Define objectives, criteria (and weighting), roles and responsibilities, the use of data."

- "Rules for making water management decisions must be defined at the outset and used to determine the final decisions."

- "The decision-makers need to lay out long-term objectives.

    1. Maximize groundwater recharge.
    2. Maximize water quality.
    3. Maintain/restore historic water levels.
    4. Maintain/restore seasonal flow fluctuations in streams and rivers.

Once these objectives are agreed on, decision-makers could evaluate applications on the basis of whether the proposed use would help or hinder their long-term objectives."

- "Factors which must be included in the decision-making process include: assessment of a complete range of choices; consideration of risk; evaluation of environmental, social and economic impacts; consideration of water as an economic good; and a sound, scientific understanding of the role of water in the ecosystem."

- "River basin planning should provide the detailed knowledge necessary to formulate a decision where multiple users have conflicting needs and desires. The types of issues addressed in the river basin plan should include apportioning flow, dealing with conflicting users, establishing a value for water rather than just treating it as a free resource, and managing the basin as a whole unit rather than as individual stretches."

- "The decision-making process should provide the mechanism for consultation, co-operation, and co-ordination ('Triple C')."

- "The decision-making process should be integrated with other affected government departments and regulatory bodies."

- "The decision-making process should provide for a consistent one-window approach for all possible parties affected."

- "Albertans must participate in water resource decisions with more input required from the general public and less from big business."

- "Decisions should not be made by government alone."

- "Decision-making should reflect a wide range of interests and views."

- "Use of public input, coupled with government input, not government input selectively endorsed by public input."

- "The water resources decision-making process must represent the views and best interests of the majority of Albertans."

- "We must guard against persistent pressure from vested interest groups."

Environmental Impact Assessments (EIAs)

Participants were firm about the need for proper EIAs prior to decisions to proceed with any project involving rivers, lakes, wetlands, and river reaches or flow basins. They expressed their feeling that current practices are not satisfactory; that the need for an EIA may be influenced by political and/or economic pressures (i.e., development projects can bypass the EIA process). It was generally felt that an EIA should be integral to planning any development project, whether the proponent is government or the private sector, and that the cumulative impact of all industrial development in the area be assessed as well.

- "All projects utilizing or influencing water resources must be assessed not just major water management projects."

- "Do not judge individual projects in isolation--must have the ability to look at overall and cumulative impacts."

- "Criteria for triggering formal Environmental Impact Assessments should be spelled out in legislation."

- "The new legislation must ensure that projects involving the use, diversion or pollution of water resources are assessed for the significance of their impacts on the environment, and that projects which will significantly impair either the quality or quantity of water resource are not approved."

For more discussion on the topic of Environmental Impact Assessments, see page 82.

Municipal, Provincial, and Federal Government Relations

The role of government in water management was at the centre of public discussion and generated a large volume of comments. Those who commented criticized the present management system for being complicated and fragmented, and for allowing jurisdictional overlapping. They strongly supported the idea that water in Alberta has to be managed in complete co-operation with other levels of government, and with governments of the other provinces and territories. They advocated a "one-window" approach to water resource management under the jurisdiction of Alberta Environment, and better co-operation among provincial departments.

Co-operation among Provincial Departments

- "To streamline research and study, decision-making and approvals, and to emphasize conservation and protection of our natural resources, it is our strong recommendation that much of this duplication of services be eliminated. We would like to see Alberta Forestry, Lands and Wildlife under the jurisdiction of Alberta Environment."

- "The river basin plan and an integrated resource plan should be the basis for all government departments working together to achieve a common defined goal under the jurisdiction of Alberta Environment so that everyone is working together in one direction, and there should be a chain of command and accountability, so that progress is made and one department cannot pass the buck to another department."

- "Co-operation beats confrontation but the Province must control its own resources. Too many jurisdictions having control causes uncertainty and confusion to proponents of projects."

- "Sorry, I do not know how you can make different government bodies co-operate unless they are governed by one body."

- "We need to develop one-window approaches to dealing with water resource projects. There must be clearly defined roles for each level of government. The Province or the Feds or the municipalities should not make these decisions alone. More co-operation is needed."

- "Only one department can be in charge in order to maintain a singleness of purpose, cohesiveness or response, and commonality of interpretation of the legislation."

Co-operation among all Levels of Government

- "Define all areas of jurisdiction (i.e., Federal, Provincial, Municipal) related to functions and responsibilities to eliminate overlaps."

- "The various levels of government should co-operate fully to manage lake water quality."

- "We have to co-operate with all levels of government when it comes to water issues. Make sure we use common sense issues (i.e., do not let the feds control Alberta because of some navigation bill that has no bearing on our rivers)."

- "Other levels should provide input."

Co-operation With Other Provinces and Territories

- "It is not exclusively our water. Consequently, we must co-operate with other governments so that all the water users are treated fairly. In doing this we should avoid excessive bureaucracy and overlapping duties."

- "All governments must work together to simplify their approaches to water project evaluation and towards water resource conservation and protection. This does not mean reducing the stringency of reviews for abrogating responsibilities. It means reducing duplication and being supportive of sustainable approaches to water resources protection and conservation."

- "Because drainage basins and aquifers do not conform to political boundaries, it is to the benefit of all that co-operative and agreed-on processes for conflict resolution are in place."

- "An interprovincial agreement on water quality is needed. The Agreement on Apportionment covers only water quantity and does not ensure maintenance of potable water for downstream users."

- "Actions taken in Alberta affect quality and quantity of water available in other prairie provinces and NWT. Consultation with and between the various levels of government is important."

- "This should not be a challenge. If we were really protecting our water resources, we would not be reducing either the quantity or the quality of the water that leaves our jurisdiction, and other governments would not have any complaints with us."

- "Other governments should also be involved in the review of the planning document."

The Role of the Federal Government

- "The Alberta Government should recognize that the federal government also has responsibility for water management."

- "The Province should not try to usurp control from the Federal Government. There are clear roles for everybody here...what is needed is more co-operation and caring for the resource."

- "Need clarification of roles and responsibilities of federal and provincial governments."

- "Water management must be planned with adjoining provincial government. The Federal Government should have the final approval on any major projects that are planned."

- "Environmental jurisdiction is a fundamental constitutional issue. Alberta and the provinces must take a stand to clearly define the boundaries and limits of federal authority in its laws, agreements and protocols that affect the provinces. There must be consensus and equivalency versus the present conflict and duplication."[1]

- "In land/water management, the Federal Government should also be a partner (Indian lands, reserves, interprovincial / international flows)."

- "It goes without saying that we have a moral obligation to consider downstream users. Increased federal involvement may be necessary because to date the government of Alberta has shown a total disregard towards the protection and preservation of natural riverine ecosystems."

The Role of Municipalities

- "The role of local governments is recognized in the proposed Environmental Protection Act. Therefore, shared responsibility for water management should also be recognized in any legislation. Local governments could play key roles in the delivery of any water planning objectives or guidelines. This should be recognized."

- "Municipalities also have a role to play in zoning and land use bylaws which prevent inappropriate developments affecting water resources. Perhaps more importantly, they have a significant role to play in conservation, education, and other initiatives involving lifestyle changes. Thus, the role of municipal government in water management should be both encouraged and strengthened."

- "The key to low cost-effective future planning lies in the hands of the municipalities, following guidelines based on public consensus. A provincial board should monitor only--not regulate."

There was some reservation with respect to transfer of responsibility to local authorities:

- "The Province must maintain 'some' control since local authorities will not tend to look at the 'big picture'; however, maintenance/operation could certainly be done locally."

- "Local authorities are too often biased and swayed by local economies."

- "Local authorities should not be allowed to carry out water management plans on projects involving water (rivers, lakes, wetlands) without provincial/federal government approval and EIAs.

Data Collection and Analysis

The role of monitoring, data collection, and the use of the computer in data analysis was frequently discussed in relation to water management. Participants expressed strong support for using the best environmental data and modelling tools. Rigorous, regular monitoring programs are essential in developing good databases which should be shared, participants said.

- "Information gathering and distribution is an important aspect of management system. Information is essential in raising the public awareness of issues."
- "All management requires a good scientific understanding of the resource. Ongoing monitoring programs are essential and should be co-ordinated with the federal government and adjacent provincial governments to maximize the information collected."
- "A consistent method to keep track of all natural resource depletion, degradation and values is needed."
- "Measures should be taken to ensure that water quality is maintained at present day standards and also improved where possible. This requires much more detailed monitoring, as well as updated assessment of our water resources."
- "Standardized procedures for water use monitoring should be developed. All water users should be encouraged, or required to participate in the development and maintenance of a comprehensive water database."
- "Where data are lacking to support decision-making, the applicant should be held responsible for acquisition of the necessary information."
- "If all planning were able to be based on a common database, there would likely be fewer conflicts to resolve."
- "Put water resource information into developing 'land related information systems', so that planners can better project future water supply and quality."
- "Alberta Environment should expand its role in monitoring water quality and develop baseline data on lakes and rivers."

- "There should be a national strategy to develop co-operative research partnerships among governments, academia, and industry."

The public expressed appreciation for the predictive ability of computer models, and how their use can enhance the ability to make better decisions:

- "Man's ability to 'manage' anything is questionable at best. Therefore, I would recommend that more research be done to develop computer models and compare these results over say a 10 year period with actuality."

- "One area in which there is a significant need for enhancement is the ability of water quality/quantity models to accommodate the influence of non-point discharges."

- "Modelling tools can be used in evaluating the effects of one water use upon another."

- "These models can significantly enhance the ability of water managers to achieve integration and positive water management decisions."

- "The same modelling process could be employed and developed to a higher level of detail to more accurately predict the impacts of any particular project."

- "Through tools developed in the river basin processes (i.e., interactive computer models) there should be the ability for licencees to evaluate the relative effects of changes in water management in meeting water shortages."

Management of Lakes

Lake management was a popular but controversial topic. Public opinion was polarized among those who were in favour of active lake management and those who opposed it. Some participants felt that indirect lake management would be the best solution.

- "The government should include in its legislation, provisions for managing and protecting lakes that are important. The lake water quality should meet the same requirements as other water resources, especially if the lake's outflow affects the public."

- "We should look after our lakes first before it is too late."

- "Would like to encourage active lake management on intensively used lakes, which are inadequate for the use allocated to them. Lakes requiring active management should be listed and ranked."

- "Expand programs of active lake management (i.e., lake quality enhancement, lake level stabilization and augmentation)."

- "The existing Alberta Environment practice of co-operation with local authorities to develop lake management plans could be expanded to include lakes with regional or local, rather than only provincial significance. The responsibility should lie with regional and local planning authorities to ensure that land use developments which will have a negative impact on water quality and quantity in the lake are not approved."

Some concern was expressed about costs which run "out of control" in lake management, and the benefits of such management were questioned:

- "A good idea but costs are out of control compared to benefits."

- "Lake management should be done only when the entire ecosystem benefits, not just adjacent cabin owners."

- "The cost of active management should be shared among the government and lake users, as well as adjacent land owners."

The use of "enhancement" technology in lake management was discussed on several occasions:

- "Enhancement should be a basic component of the Province's management of surface waters."

- "Presently, Alberta Environment does not have a unit with expertise in lake enhancement technology. Because this is an area which is at the forefront of new technology, it would be best done in co-operation with...the University of Alberta."

- "The Province, in conjunction with the University of Alberta, should (1) do a comprehensive review of existing enhancement techniques, and (2) develop a

framework to encourage the rapid development and commercialization of new techniques. The priority for enhancement should be water bodies which are inadequate for human needs."

Some respondents were against active lake management by the government.

- "The government should not take an active role in managing levels. Continue to monitor and protect water quality of lakes."
- "Management abilities are not advanced enough to 'charge' ahead with any 'megaprojects' of this type.
- "Lake stabilization should be discouraged."
- "Lakes should be left to nature."
- "Increases and decreases in river and lake levels are natural and play important roles in the natural system; therefore, stabilization of lake levels for human benefit is not compatible with the principles of sustainable development."

Those who advocated indirect lake management made the following comments:

- "The society applauds the indirect solutions mentioned (land-use controls, sewage treatment and minimizing agricultural run-off)."
- "More emphasis should be put on indirect lake management, i.e., land use controls."
- "Lake management should certainly include controls on pesticides, fertilizers and intensive agricultural operations around lakes in the immediate vicinity or tributary streams."
- "Forestry management should include lake protection."
- "Alberta Environment [should] conduct and/or encourage research into the potential limitations and impacts of both indirect and active lake management techniques. Until both the positive and negative effects of a technique is known, it is not possible to apply it wisely."

Wetlands Management

Many comments expressed appreciation of numerous socio-economic and environmental values of wetlands and the need to protect, preserve and use this water resource wisely. Such values include wildlife habitat, flood control, water supply, groundwater recharge, natural water clarification and purification, recreation, conservation of surface water, and aesthetics.

- "Now wetlands and small steams disappear creating a desert environment, together with the disappearance of even small 'unmanaged' wood lots. Without a properly managed land base, Alberta has to face poverty and the water will also disappear."
- "Society benefits from the existence of wetlands, and society in general has a responsibility to ensure their survival."
- "The value of wetlands to all of our society must be reflected in the provisions of the Act and Regulations."
- "The policy for wetlands [should] become mainstream in Water Management Policy and Legislation Review."
- "The current policies relating to draining temporary and permanent wetlands has to be re-evaluated."
- "The wetland policy needs to be expanded to unsettled areas of the Province."
- "Legislation should be balanced so that it is as easy/difficult to enhance a wetland as to drain it."
- "In a new Act, there must be a requirement for mitigation of wetland losses due to drainage, and in particular, publicly funded drainage."
- "No net loss of wetlands."
- "Restoration of drained wetlands to their historic natural conditions must be facilitated in the provisions of a new Act."
- "The definition of wetlands should be expanded and clarified within the Act. It is essential to recognize the differing wetland classes, from spring sheet water,

through semi-permanent to permanent wetlands, each of which serves a different purpose in our environment."

- "Preservation of wetlands should be encouraged financially."
- "Economic incentives to farmers--should not be penalized for maintaining wetlands."

Flood Plain Management

Not many people commented on this subject, but those who did spoke of their concern regarding land use and government's role in such areas:

- "Watersheds and land development along rivers must be managed so as to prevent serious flood damage."
- "The legislative role in controlling flood plain development needs to be reviewed."
- "The government can help by quantifying the risks and developing plans to prevent water problems before they happen."
- "The role of the Province in mitigating damages due to water should be limited to flood plain mapping/flood predictions/advisory."
- "We feel that one of the best and least costly ways of flood plains management is through land use planning. If people are foolish enough to build in the flood plain, then they should not expect the government to bail them out when the inevitable happens."
- "Land use planning at the local and regional levels has a role to play in reducing risks associated with flooding by controlling the kinds of new developments that are permitted in floodplain areas...These kinds of controls should remain in the hands of local and regional decision-makers."
- "Urban development should be prohibited in flood plains."

- "If a municipality licenses development on a flood plain, it should be held directly responsible for flood damage."

- "Private lands should be flood proofed by acquisition or secured by contract like the Landowner Habitat retention program presently operating in counties of Red Deer and Minborn."

Participants supported the basic concepts of the Flood Damage Reduction Program and requested that the guidelines and regulations of this program be administered on a site-specific basis, taking into consideration the unique characteristics of each urban municipality designated for flood risk mapping under the program. Some felt that this program should be put into legislation. The following areas were singled out for improvement:

- "Better study of the consequences of water flooding."

- "Better understanding of causes of surface water flooding (e.g., clear cutting)."

- "Investigation of non-structural solutions to damages caused by flooding."

- "Utilization of natural means to control flooding and drought, such as tree planting, wetland protection, preservation of floodplains, retention of muskegs."

Interbasin Transfer of Water

This topic was controversial. The majority strongly opposed the interbasin transfer concept as a means of ensuring water quantity.

- "No interbasin transfer should be permitted."

- "Water transfer should not be undertaken to increase water supply while alternatives such as conservation exist."

- "I particularly object to intersystem transfer because of the possible ecosystem disruption/contamination, due to introduction of a foreign element (fauna, flora or microbial)."

- "There must be no interbasin transfer because the consequences can cause wide ranging, unpredictable and irreversible damage to the ecology of the affected region."

- "Promoting water management with strategies like interbasin transfers testifies only to this government's environmental ignorance."

Some people felt that water should not be transferred from northern river basins to southern Alberta:

- "Who would deny that the majority of the measurable short-term benefits of an interbasin transfer invariably occur in the receiving basin? Hence, a regional disparity between the beneficial and detrimental effects of an interbasin transfer could be expected. Exacerbating the existing North/South disparity would have unpredictable harmful socio-economic impacts for our Province."

Some other views presented are as follows:

- "Transfer of water from one place (lake or stream) to another should be made rarely and with full knowledge of consequences for flora, fauna, recreation, tourism."

- "Examine whether interbasin transfer is the best means of improving water quality."

- "Interbasin transfer should not be ruled out in the future, if required, for the good of the Province."

- "Interbasin transfers within the Province may prove beneficial for those areas that need water for domestic or other uses."

- "There should be consideration given to interbasin transfer to ensure water quality."

Export of Water

Even though not many people commented on this subject, the message from those who did was strong: "No export of water." "No transfer for any reason." "No sale of water outside Canada." A few participants contemplated the possibility of exporting our water, on certain conditions.

- "No export of water. The short term benefits would be outweighed by long-term negatives (i.e., higher food costs, possibility we might have to buy back water)."
- "No export of water. No exceptions. We must honour our downstream commitments with regards to quality and quantity."
- "My biggest concern--NEVER, NEVER EXPORT WATER TO THE U.S.A. The economic temptations are enormous. By selling our most precious resource to the U.S.A. we will sacrifice our natural future to the U.S.A.$. That would be completely disgusting."
- "Ensure water cannot become an international commodity!!"
- "Legislation must be enacted to illegalize the cross border sale of water. It is not sufficient to have only a policy."
- "Any transfers would drastically affect the natural ecological habitat of a river basin which may be irreplaceable."
- "To my knowledge, no one has done an in-depth study on the future needs of this country."

Those who contemplate the possibility of exporting our water made the following comments:

- "DO NOT SELL OUT our water resources to the U.S.A. Be certain that all of our current and projected needs are satisfied, guaranteed in every way, before any international deals are made."
- "However, some day, assuming interbasin transfers have become a reality and

surplus water exists, there may come a time when export of water may be feasible and desirable."

- "Abandon grand schemes to transfer water to the U.S. for irrigation and take a better look at the possibility of selling water to the U.S. for domestic use only."

- "I believe it is inevitable we do supply the U.S. with water, but I do hope the negotiators are well-aware that once we start, we cannot turn off the tap. I believe we should have ample compensation for our water and can be renegotiated at regular intervals."

The Relationship of the Water Resources Act (WRA) to the Alberta Environmental Protection and Enhancement Act (AEPEA) and Other Legislation

This controversial topic received a lot of attention and generated a large number of comments. Participants' views were divided between supporters of the idea that WRA should be combined with AEPEA, and those who opposed this idea.

Support to have the water legislation stand alone, separate from other legislation, was expressed by some comments:

- "One act for water resources, NOT PART OF OTHER ACTS."

- "The Water Resources Act (water quality and quantity) should stay as an independent Act."

- "Water management legislation has to integrate water quality and quantity."

- "Separate the Water Resources Act (quantity) from the Alberta Environmental Protection and Enhancement Act (quality)."

This position was supported by the following arguments:

- "The Water Resources Act should stand alone. If consolidated, it could be more difficult to amend in the future when such amendments are necessary. It works now on its own. Recognize the need for co-ordination."

- "Water is of vital importance to all life. This importance should be sufficient reason alone to confirm the need for water resource legislation to STAND ALONE, to NOT BE PART OF ANY OVERALL UMBRELLA ENVIRONMENTAL LEGISLATION. Water resource legislation is significantly complex and important that its long-term needs will be best served within its own legislated mandate."

- "Water's universal effect on all aspects of life, environment and development, supports the need for water legislation to stand on its own. It should not be combined as part of an overall environmental legislation package. It might even be worthwhile for the Province to consider removing some water related items from the proposed AEPEA legislation in favour of centralizing all water legislation within a common statute."

- "Another important reason to keep water legislation separate from other environmental legislative packages is to minimize the potential damage or uncertainty that might be created if new legislation was successfully challenged in the courts."

Some of those who agreed that water quality could be regulated by AEPEA, while the WRA could regulate water quantity withdrawals were concerned that "this legislative separation of water quality and quantity issues could pose problems in monitoring the relationship between water withdrawal and water quality." They suggested that provisions in legislation should perhaps be drafted to ensure that quality and quantity issues are not separate in practice.

Some participants felt that the idea of combining the Water Resources Act with the Alberta Environmental Protection and Enhancement Act is a good one.

- "Perhaps AEPEA and WRA should be combined."

- "Make this Act a part of AEPEA. This integration would cover off quality/quantity relationship, enforcement, and wetlands-habitat protection.

An additional concern with respect to this topic was jurisdictional overlap between several Acts having an environmental component, lack of co-ordination, and potential conflict between these acts (i.e., Irrigation Act, Public Lands Act, proposed Alberta Environmental Protection and Enhancement Act, Public Health Act) and the new water use legislation. Of particular concern was the relationship to the Irrigation Act.

- "The Water Resources Act and Irrigation Act must be compatible."
- "Better integration between the Water Resources Act and the Irrigation Act relating to water quality and Wetlands Policy."
- "Co-ordinate the Water Resources Act and the Irrigation Act to avoid conflict."
- "Section 193 of the Irrigation Act is related to section 53(2) of the Water Resources Act."
- "Legislate agricultural practices to prevent loss of water quality and quantity."
- "Section 3 of the Public Lands Act should be incorporated into legislation under the Environment Act."
- "There is an overlap between Public Health Act and Water Resources Act."
- "We need to define the relationship of other legislation in other jurisdictions on water resources/quality."

Participants offered several solutions to the jurisdictional overlap problem:

- "Legislation should be part of an integrated environmental management framework."
- "All users/movers of water should be liable (bound) by the Act (e.g., Alberta Transportation--impacts of roads on drainage) regardless of their main goal."
- "The Water Resources Act should be enforced by the Department of Agriculture."
- "Revise the political system to make politicians and polluters accountable, and integrate all legislation."
- "Harmonize legislation, regulations, and standards with other jurisdictions to promote consistency, efficiency, and effectiveness."
- "We would like the many pieces of legislation combined into one understandable and effective piece of legislation. And government departments must also be subject to this legislation."

Public Involvement and Education

OVERVIEW OF PUBLIC COMMENTS

The public delivered a clear message to the government regarding public involvement in making decisions about managing our water resources: it wants to be involved. "The water resource management decision-making process should not be done by government alone." "Politicians and senior bureaucrats are not capable of making informed decisions on water management without public input." Members of the public were concerned that the water resources decision-making process "represents the views and best interests of the majority of Albertans," in "an open public strategy of protection."

Comments indicated that successful public participation depends on the contributions of well-informed people. Such participants "develop a balanced perspective of issues," make "informed decisions" and "provide meaningful input." Therefore, the public wants firm government commitment to making public education an integral part of future policies and programs.

YOUR COMMENTS

Public Involvement Strategy in General

The discussions focussed on what should be taken into consideration when designing a public involvement strategy, who should be involved, and how the public may get involved in a meaningful way. Many ideas and suggestions were offered:

- "Federal and provincial legislation should be strengthened with greater and more meaningful public involvement, and with full access to information, in all aspects of water management and protection."
- "Public environmental reviews should be conducted before any decision is made to proceed with a project."
- The public involvement process should be "clearly defined and always allow for public input."

- The process could be designed on a case-to-case basis, depending on needs: For example, "it may be necessary to have full public input into initial licensing reviews; however, it is questionable whether this is necessary or manageable for all subsequent renewals or amendments." "Some applications are too small to bother with the hassle" and it would be enough to advertise them. "Major projects or improvements that affect water quality should be subjected to formal public hearings" or a "general provincial referendum." "Allocation of water rights must be an open public process. No closed door wheeling and dealing".

- A democratic process requires that "all projects involving public money be made available for public review and scrutiny."

- The public involvement process should be "flexible and take a variety of forms" depending on the issue (e.g., formal public hearings, meetings, workshops, open houses, public advisory committees, telephone surveys, written submissions). "The Water Resources Act should provide different forms of public participation."

- Public meetings held during the day "limit the number of working taxpayers who can attend." "In today's society the ordinary citizen does not have the time or resources to participate in hearings conducted in the traditional way." Alternatives suggested were to "vote in individuals to represent their views and concerns" or to inform the public about the issue through newspaper articles in both the city and local newspapers, encouraging citizens to respond in writing "with their views and concerns."

- The process should involve the public at the earliest stages "right from day one." "Public involvement at the earliest stages is critical." Early involvement will satisfy the public that "it has been heard, and important information passed on to decision-makers."

- The public wants to be involved in all stages of the decision-making process. "If the public is merely given the chance to 'react' to what is being presented, they will...always react in a negative way."

- The public involvement process should be meaningful "not just an excuse for the public to let off steam," or to "be just a public relations exercise."

- The Government should "not just say 'here it is' at the end of the process."

- "The new environmental legislation should stipulate that the Minister cannot overrule recommendations that are derived from the review process." Ignoring public input "creates a cynical and hostile electorate." "Unless the collective wisdom of the public is listened to, then only cynicism and anger results."

- The following were suggested for a legislated public hearing process: "the public appears before a multi-stakeholder panel; the format is a full-blown, formal public hearing; the recommendations from the panel are decision-making NOT advisory only; model process after the ALPAC public hearing process; joint panel participation from all levels of government (local, provincial, federal)."

- Financial support should be provided to those who "wish to make a meaningful representation in any consultation process."

- Intervenor funding should be restricted to "directly affected landowners, and to representatives of conservation and other organizations with a demonstrated history relating to the area or the project."

- "There should be some 'legitimizing' of interest groups (i.e., recognition that some interest groups represent more people than others, and have more time and resources to lobby their case)."

- "Major projects should be announced through several media, including the MLA's town hall meetings." "The public should be notified of all applications to water management with clearly worded advertisements or notices in newspapers."

- The "advertising requirement should only be there where a minimum quantity usage is to be exceeded, or where a foreseeable impact on others exists," or "environmental damage is likely to occur."

- Public input should be sought on a continuing basis. It is "a must at all times." The Act, policies and regulations should be revised and updated in the future "with support from public inputs."

Who Should Participate?

There were several points of view on who should participate in the public involvement process:

- "The public at large should always have the opportunity to comment on river basin plans, water uses and large scale projects concerning water." "Public involvement should not be restricted to 'directly affected persons.'" "Water Resource decision-making processes must represent the views of the majority of Albertans."

- "The general public is the largest long-term stakeholder," so "all public should be permitted to be involved," "to have a say."

- "The affected public and stakeholders only should have input into water management decisions, except when the Province is considering export or decisions relating to water management affecting other provinces and other countries." "All Water Management decisions are not always of sufficient size or significance" to involve such a large process. Participation of everyone "could encumber the decision and management process far too much."

- The definition of the "affected public" needs to be expanded "to broaden the segment of the public that is allowed to be involved," and to "provide a broader definition of vested/genuine interest."

- The "public directly affected must be involved" but "other public which is not directly affected or not affected should have an opportunity to comment...that is, no one should be totally excluded but the degree of involvement could be variable."

- A number of groups were named as important potential contributors: Alberta Health (Health Units and Public Health Inspectors); the grass roots; Native people (they "have sound judgements in certain areas because of lifestyle and training"); "rural and agricultural based individuals"; proponents; government regulators; Environment Council of Alberta; and, "professional societies or qualified professionals who will not gain from the project in review."

- "Radical self-proclaimed environmentalists...[who] do not represent the people of Alberta" and "politicians who have short-term goals and objectives" were named as those whose participation should be limited.

Public Involvement in Planning

A large number of comments were specific to public involvement in planning for the use of water resources.

- "The commitment to public development of basin plans should be written into AWRA [Alberta Water Resources Act] with more specific directions given in its attendant regulations."

- "There should be a master plan developed for areas with lots of public input and cost-to-benefit ratios looked at."

- Some suggested the public could be involved in the river basin planning studies through a form of a public review process. Such "studies could be subject to review periodically, and updated as required."

- Public forums (e.g., River Basin and Land Use Planning Forum) should be created when the level of interest in the subject is "high and actively expressed." The first step, however, "is to gauge the level of interest."

- "At all times the public should be kept aware of what the government is planning and the results of the research and studies" in order to be able to "offer better input and better co-operation with government."

- "Public notification in newspapers must be made beyond the local area where a development is proposed, particularly because water developments can have basin-wide implications."

- "Once consensus on the needs for the individual river basins has been reached, it should be left up to the Water Resources Administration to administer the use based on the planning documents."

- "The water resources decisions-making process is best handled by a committee of concerned citizens and government experts." "Set up regional/basin water review boards with government/private members to discuss regional/basin issues, problems." Create a "series of River Basin Planning Commissions with local/community representation." "There should be a water management board from each region in the Province and they take their views to the government before a decision is made."

Informing the Public

Many participants stressed that meaningful public participation depends on access to good information. The comments ranged over all aspects of public access to information from "freedom of information," "The Freedom of Information Act," "free public access to information," to "better access to information."

- "Not everyone is informed enough, or comfortable enough with the system to volunteer to be part of it."
- Put information "in plain language that conveys to the layman what the technical data conveys to the expert i.e., the straight facts interpreted in concise, precise form that the AVERAGE person can understand."
- The kind of information requested included public advertising for licences, appeals, projects; notification of all applications; summary documents for each river basin; the results of the research and studies; educational information; government information and assessment of specific projects; information on "what the government is planning"; information about cumulative effects of development; information on impacts on health.
- The public wants "regular reporting of key indicators of water quality, water use and ecosystem health in an annual Statement of Environment Report." This "report would help the public to be more cognizant of the state of Alberta's water resources and could also be instrumental in promoting changes in behaviour and lifestyle (e.g., conservation)."
- "A water quantity and quality index should be published. The public should be able to access a toll free computerized hot line to access this information."

Education

The public expressed concern that those participating in the public process may not be well-informed regarding the issues. Several suggestions were made respecting content and delivery of programs.

- "Even though the public input is great...a lot of the public is not well educated...This can lead to loud public outcries which have no real foundations."

- "They [the involved public] should be "informed, have credentials or equivalent experience, [and] desire to protect our future resources from negligent decisions."

- "Maximum public involvement and commitment to public education must be built into future programs and policies."

- A "management system should be developed, which would be responsible for public education, issue identification, co-ordination of land and water management, and general responsibility for water uses."

- Educational programs in the following areas were requested: "the importance of water to the well-being of ecosystems and humans"; "wise stewardship of water resources"; "the problems facing the nation's waterways"; and "the ways in which problems could be solved."

- Some other comments indicated the need for public education about responsible water use; conservation and recycling of water; innovative uses and reduction of use; water management; importance of water quality and quantity; "true value of water"; benefits of irrigation; benefits of more water storage facilities.

- The public would like to see "sound education programs in schools where students begin to see and understand the interrelationships among science, technology and society." "Water conservation could be a part of the environmental education curriculum." In science curriculum of schools, students "should be taught about the natural causes of deterioration as well as those caused by mankind." It was also suggested to "create an 'adopt a river' (or River Reach) program for community groups and schools" and a "riverwatch conservation program--patterned on Crime Watch or Neighbourhood Watch to 'guard' the rivers."

Protection of the Aquatic Environment

OVERVIEW OF PUBLIC COMMENTS

Albertans feel strongly about the protection of the environment. Protecting our water resources from pollution, overuse, and degradation was the focus of the public review of water management policy and legislation and generated a large number of comments. The range of issues discussed was very broad, from a philosophical approach to water and water management and protection, to water quality and quantity, degradation of rivers and lakes, pollution of groundwater, loss of wetlands, and sources of pollution. Also included were suggestions on what should be done to set goals for environmental protection and ways to accomplish these goals.

YOUR COMMENTS

A New Approach to Water and Water Protection

Participants stressed the high value of water as a "precious, limited commodity," and they urged a new policy and legislative focus on sustainable use of water and the protection of ecological integrity of ecosystems.

- "Water is not simply a resource such as oil or timber or evenfarmland to be divided among competing interests."
- "Water is the lifeblood of all ecosystems, an irreplaceable substance at the very heart of our existence."
- "The water strategy must ensure the protection of biological diversity, ecological integrity and human health as the first priority."
- "A philosophy of preservation must be adopted wherever possible, as an urgent priority."
- "The focus should be on sustainable activities within the natural environment."
- "There has to be a major shift in policy and legislation towards demand manage-

ment, as opposed to supply management."

- "Protect what we have and let other interests solve their problems with innovative technology or go elsewhere."
- "Change the attitude that water not used is wasted."
- "Leave sufficient flows and lake levels."
- "Ecosystems are integrated, and can only be effectively managed or modified if all components are taken into account."
- "The government needs to shift its focus from looking for further water resources to exploit, to realizing that a vast amount of water can be found by improving use efficiency."
- "Build a reputation of a protector of our water resources."
- Alberta Environment should undertake "exploration and development of alternative measures (conservation techniques, advanced irrigation technologies, etc.)" to prevent further disruption of water systems."
- It should use "preventative measures i.e., to develop methods to sustain and protect, so problems are very minimal."
- "The current process of water management by potential influence and political repayment policy should be abandoned in favour of a process based upon protecting this valuable resource for future generations."

Protection of Rivers

Many emotionally charged comments about protection of rivers show how strongly Albertans feel about this issue:

- "Alberta's rivers belong to all Albertans. This is what brought people to Alberta."
- "Our rivers are treasures we must never recklessly tamper with."

- They are "an irreplaceable part of our natural and cultural heritage."
- "We in Alberta have a special responsibility since we are stewards of headwaters. If we destroy the headwaters, we destroy our future and others, both present and future generations."
- "Except for natural limitations, all rivers and lakes in Alberta should be swimmable, fishable and drinkable with minimal treatment."
- "Even when placed under provincial control, no one shall have the right to change a river valley, to transform the landscape, to drastically restrict or to divert the flow of a stream. No one should claim to have the mandate to 'turn the tide,' to build dams or to reverse the flow of a river."
- "Preservation of our rivers, with the natural surroundings that depend upon them and upon which they depend, must be specifically addressed in legislation in such a way as to prevent continued degradation."
- "The ability of a river to destroy biological pollutants should be reserved as a protective capacity and not exploited as a resource."

Instream Flow Needs (IFN)

The need to protect instream flow needs (IFN) was strongly supported by the public. Participants discussed various requirements for IFN, criteria, and options, and offered many suggestions as to what should be considered in order to achieve environmental protection goals when establishing meaningful instream flow levels.

- "The principle of IFN is excellent, but it must be comprehensive and it must not be compromised by expediency or political whim."
- "Highest priority should be given to maintaining instream flows."
- "Instream requirements must be paramount if our streams are to be returned in their original state to the future generations from whom we have borrowed them."
- "Humans are not the only ones who depend on water for their existence."

- "Consider riparian habitat, needs for fish, benthic organisms [bugs], wildlife and the supporting ecosystem."
- "Recognize instream flows as a legitimate, legally recognized water right which can compete with other water rights on a priority basis."
- "The Water Resources Act should provide for the establishment of instream flows to protect our rivers and streams as living ecosystems."
- "Properly determined IFN values should be enshrined in legislation."
- "Implement measures to protect natural flow regimes and water quality, so that upstream activities and developments do not affect downstream reaches and vice versa."
- "Licences to withdraw water should be issued conditional upon the ability of a waterbody to meet instream flow needs."
- "We support the concept of instream flow needs as long as these needs are based on a sound, scientific rationale."
- "IFN must be determined using state of the art techniques. This process should be independent and unfettered by political pressure and economic considerations."
- "IFN must be set for all streams, using high standards in the establishment of such things as dissolved oxygen."
- "Instream flow objectives must be defined."
- "IFN must consider a broad perspective" [i.e., annual and seasonal fluctuations, regional and geographical differences, compensation for effluent loadings, and the biological oxygen demand they create].
- "IFN should address long-term issues."
- "Establish guidelines for effectively dealing with instream flows."
- "IFN determinations should be subject to regular review and revisions based on improvements in available information and knowledge. It must be recognized that

instream flow needs involve not only the quantity, but also the quality of water in a river."

- "Sufficient instream flows should be recognized to ensure the continued health of ecosystems."

- "There should be a mechanism for public input and scrutiny of IFNs determinations."

Some concern was raised with respect to "minimum flows." The views differed on this subject:

Those who supported the 'minimum flows' concept said the following:

- "A minimum flow should be maintained in the river."

- "There should be a minimum water level in any system, all water above should be allocated...on a priority basis."

- "Minimum flows should be legislated."

- "Establish minimum base flows in rivers to maintain good quality water over the entire Province."

- "A minimum flow should not be established based on the ability of a stream to assimilate wastes."

- "There are alternatives for treating waste waters, but no substitute for water supply."

- "Be careful that the minimum levels are not set too high so that the flow cannot be obtained realistically."

- "What is minimum water flow? Is it enough to sustain fish, wildlife and habitat?"

- "Alberta Environment should proceed with scientific research work necessary to identify minimum instream needs for each of our river basins to more effectively detail these requirements."

Those who criticized "minimum flows" were concerned that "minimum flows" may not be enough to protect rivers:

- "'Adequate' instream flows should be maintained and not minimum flows."
- "There should not be a concept of minimum flow in legislation. This would result in the lowest common denominator becoming the preferred flow, making the system continually under stress. Humans are not healthy when continually stressed: neither are rivers."
- "The 'minimum flow principle' should be abandoned and Alberta Environment should develop more realistic (and scientific) standards unique to each river basin, and as a part of a statutory river basin plan."
- "No more use of the term 'minimum', as it usually becomes the norm."

Natural Rivers

"Natural," "unspoiled," "untamed," "wild," "scenic" free-flowing rivers are highly valued by Albertans. Some of them expressed strong feelings on this issue, urging protection of these undeveloped rivers, and a few urged the Province to join the Canadian Heritage Rivers System (CHRS).

- "We have to recognize the intangible value and the beauty of a free flowing stream in its natural state. We shall not just see it as a welcome commodity to take advantage of."
- "Left alone, untamed rivers represent a significant economic value because they are and will become a magnet for tourism from densely populated areas of all countries where wilderness is disappearing and natural river valleys are vanishing rapidly."
- "The value of undeveloped free flowing rivers is not properly documented, but these rivers are important to Alberta."
- "We have to ensure future generations have the ability to appreciate the complexities of unpolluted and untamed WILD RIVERS."

- "Keep them just like they are--not for consumptive use of water."

- "The Canadian Heritage Rivers System is an appropriate method of protection for many of Alberta's outstanding recreational and scenic rivers. Alberta should join this program as soon as possible and several Alberta rivers should be nominated for inclusion in the system."

- Water basins in Southern Alberta, which "represent the most threatened of ecosystems, should be set aside in a protected state."

- "We are a strong advocate for the entry of Alberta into the Canadian Heritage Rivers System, but, because of the urgent need for the protection of our riparian systems, we recommend that a made-in-Alberta system for protecting rivers also be implemented."

Protection of Lakes

Albertans feel strongly about the protection of lakes and consider it a top priority. Many felt there should be a plan for protection of water quality of all surface water in the Province and urged Alberta Environment to include provisions for managing and protecting lakes in the legislation. The majority of comments focussed on lake management as a means of protecting the lakes, and this subject was addressed earlier in the report. In addition, participants pointed to some important issues to be considered in lake protection and offered suggestions.

- "Care must be taken to prevent cottage owners from having the primary voice around Alberta lakes. There are millions of Albertans, 20,000 cottages, and only a couple hundred good lakes. The PUBLIC, not just those fortunate enough to own a cottage, should have voice in Alberta's lakes."

- "The Alberta government may need to take a stronger role in regulating recreational users and development on shorelines and in drainage basins."

- "Continue to monitor and protect water quality of lakes."

- "Restrict the use of motor boats on lake waters."

- "Stricter controls and enforcement on activities and usage around lakes: residential and agricultural."
- "Control industrial use of water from lakes."
- "Shoreline development should be controlled to maximize protection of lakes."
- Control of effluent discharge by industry, agriculture and cottages at lake sides."
- "It is dismaying that sewage effluent into lakes is NOT an environmental concern in Alberta! It should be, with enforceable regulations legislated through Alberta Environment."
- "Development standards around lakes must reflect protection of lake water (i.e., septic systems)."
- "Designate certain lakes for limited uses."
- "It is narrow-minded to strive only to protect human-oriented uses such as cottaging and boating. Protection of some lakes in a natural state for wildlife is also essential."
- "We would like more emphasis placed on education of lake users to understand why Alberta lakes are the way they are and how to best utilize and enjoy that resource as it is."

Wetlands Protection

"Protection of wetlands must be a priority" felt participants who commented on this subject. They also felt that "the value of wetlands to all of our society must be reflected in the provisions of the Act and Regulations."

- "Wetlands are vital and productive components of environment--habitat, storage, groundwater recharge, and natural water treatment. Their value must be recognized and protected in the new Act."
- "Preserve wetlands to ensure benefits to wildlife and water purification."
- "As semi-permanent wetlands constitute important migratory waterfowl habitat, they should be strictly conserved and their drainage prohibited."

- "Stronger emphasis on non-consumptive values of water (i.e., wetland habitat for animals, slow down run-off, etc.)."

- "I just hope that we end up with a final policy that enhances and even increases the wetland acreage in Alberta. It's high time we looked at a scenario that has benefits for all Albertans; not just a scenario that sees a group of agriculturalists and industrial and urban expansionists draining every 'useless slough' in sight."

- "Educate landowners to the benefits of maintaining wetlands."

- "My concern is that smaller [wetlands] areas are ignored. These are our most productive wetlands. Yet Alberta Environment makes no effort to protect them and routinely permits and licensees to destroy (drain) them."

- "Priorities list should include maintenance of ecosystems (especially wetlands)."

- "Seasonal and semi-permanent wetlands should be protected from degradation. Government departments should exert control over these areas unlike what has been done in the past."

- "Water Resources Act must stop the trend in wetland losses."

Surface Water Rights

OVERVIEW OF PUBLIC COMMENTS

The issue of how to allocate water rights among users, while at the same time safeguarding aquatic ecosystems, provoked a wide variety of comments. Many people felt there must be a means to meet still greater future consumptive and instream flow needs in watercourses. There must also be a means of resolving conflicts during times of shortage.

The most controversial issues focussed on how the existing system for allocation worked, what will happen to existing rights, and how rights should be allocated. Some people said that the "first in time - first in right" system of allocation is antiquated and has to be replaced. While there may be a need to review licences periodically, water users should have secure access to water. Many demanded that a new system of allocation be fair.

There is concern about the priority of one water right over another. Many people felt that instream flow needs and domestic users should have the highest priority. Others were concerned that a priority system be regionally sensitive. Some said that allocation decisions should be decentralized and made by regional water boards.

YOUR COMMENTS

Existing Water Rights

Opinions differed over how existing rights should be treated. Many people, mostly in the southern half of the Province, felt that existing rights and licences have to be respected and cannot be changed:

- "Make sure that present day licences are respected first."
- "Protect integrity of existing licences before new licences are issued."

Participants felt that there is a need to protect existing licences, especially in the cases where expensive capital commitments have been made based on a secure supply of water. Again, this topic was especially important in the south of the Province:

- Leave "irrigation rights intact in order to protect the investments these people had made in land, equipment, time and labour based solely on the existence of these rights."

- "There must be protection for people who are adhering to the regulations who have spent considerable resources in developing their land on the basis of these licences as it [the reallocation of their licences] would give authorities the power of financial life or death."

Participants said compensation would be necessary if existing rights are not protected:

- "Protect existing licences with adequate compensation if they are transferred or expropriated."

- "The protection of existing licences, combined with options for temporary or permanent tradeability in water licences should be more cost-effective for Alberta than the potential requirements for expropriation and compensation."

Some people expressed the opinion that existing rights must be reviewed:

- "Existing allocations must be open to review, otherwise the whole process is meaningless."

- "We are concerned about the exclusion of existing water licences from the review process and by what seems to be a deliberate program to entrench as many other licences as possible before the Act is revised."

- "Licences should be re-negotiated without losing seniority."

- "[Create a] grandfather clause to assist existing operations to meet new conditions."

Review of Water Rights

Many people thought water rights should be considered privileges and not rights and that licences should not be issued in perpetuity. There must be an opportunity to review existing and new licences:

- "Licences should never be given in perpetuity; sunset clauses must be implemented."

- "Water licences should be issued for a fixed term with allowance for periodic review and renewal."

- "[There] must be a mechanism to revoke licences."

- "Put a time limit on interim licences."

- "Water rights should be subject to public review and easily revoked if deemed necessary for the best interests of the general public."

Some thought that licences or a portion of them should be returned to or bought back by the government once the lands to which the licences belong is sold, when there is no longer a need for the specified quantity, or when a project is complete:

- "Surface water rights should be allocated to the land owner and returned to the general pool upon sale of the property. The land owner does not own the water rights."

- "There may be opportunities to return allocated volumes by reviewing individual licences for their actual and projected needs."

- "Projects not in operation and having water rights should be cancelled because of non-use."

- "Institute a program within the Province of Alberta to recover the surface water rights. Too much of this resource has been given away."

The length of term for a licence should take into consideration the need for a secure supply of water over the life of the project:

- "Licensing should be protected and secure for viable operations and management decisions."

- "You can't put a time limit on a licence unless the government is prepared to compensate the users who build their livelihood on the guaranteed supply of water."

Many people believed that the periodic review of licences would help to ensure the wise use and conservation of water:

- "Licences should be reviewed and updated to improve water use."

- "Renewal applicants would have to show that they are using the resource efficiently and working towards long term conservation plans."

Water Rights for Instream Flow Needs

A large number of comments were received regarding the need to establish and protect allocations for instream flow needs:

- "Establish instream flow requirement for all rivers and streams before granting licences for water removal."

- "A mechanism must be established and legislated to reduce the amount of water withdrawn from rivers that are over allocated so that instream flow needs can be met. [This may mean] cancelling existing licences with compensation."

Some suggested reaches could be dedicated to consumption and others to instream flows needs such as aquatic ecosystems.

- "If there are areas within Alberta where water allocations have already been granted that prevent the meeting of instream flows in all reaches of the river system all the time, trade-offs can be evaluated."

Many people stated that the instream flow needs should be protected through the licensing process:

- "[We should] recognize instream flow needs as a water right."

- "There should be licences for human instream uses."

For discussion on the protection of IFNs see page 40.

Priority of Water Rights

How should the new allocation system assign priorities to water rights? Most people felt that the "first in time - first in right" system should be reviewed:

- "The two policies of prior allocation and multiple use make the preservation and protection of Alberta's river unachievable."

- "Allocation of water and granting of licences should not simply proceed on a first come - first serve basis. The merit of the intended use must be assessed where water is sparse. The potential benefit or loss for the community needs to be taken into account."

- "The system is archaic."

- "We would ask the Minister to consider this position [of respecting priority dates for existing licences] and allocate water on the basis of need on priority by type of use rather than seniority of application."

A few thought that the system was working adequately:

- "I feel that the way water rights have been allocated on a first come first serve basis, while it may not be perfect, is still the best and fairest system we have until we come to the point where these rights are regarded as property and can be bought or sold or rented."

- "I think most people who wish to scrap the priority system have to come up with a more plausible explanation than simply wanting something for themselves that others currently have."

Some people stated that changes to the allocation system must address the needs of smaller users and junior licences:

- "The smaller guy should be better cared for regarding the distribution of water rights."

- "If the government continues the practice of the priority system, the government is encouraging discrimination against the junior licences which in some instances are the small farm operations."

- "There must be some mechanism which provides for allocation to all users rather than just to those fortunate enough to have their licences first."

Allocation During Water Shortages or Drought

Several individuals were concerned about how water would be allocated during water shortages or droughts:

- "There is no management flexibility during time of water shortage."
- "Establish priorities of use in times of shortage."
- "Expansion of water use must be curtailed in areas of water shortages."
- "Who gets water in times of shortage? What are the priorities? Need criteria and metering to support planning and rationing."
- "[We] support a revision to the seniority right of licences during water shortages to allow water sharing during emergencies."
- "Allocations during times of drought should be reduced across the board, either through equal reductions, or through a system of proportional reductions based on the priority of water use."
- "Priorities during drought: there should be some sharing of risk."
- "All new licences of a given use should share equally in any shortage according to the Regional Water Commission's priority schedule."
- "During water shortages all licensed and unlicensed water users must be treated without bias to avoid situations where specific users gain while others lose."

Many suggested priority lists which rank the importance of uses during shortages. Most of these lists had either instream flow needs or domestic uses of water as the top priority. The second priority was agricultural and irrigation uses, or municipal uses. Usually, industrial and recreational uses fell behind the other four previously mentioned uses:

- "Water usage priorities are listed in order of importance as follows:

    1. domestic (human and livestock)
    2. municipal (towns and cities)

3. agricultural (irrigation)
4. industrial (including feedlots)
5. recreation."

- "The present multiple use policy must be changed to re-order the priorities. Legislated instream flows should be licensed in all waterways and the sequence be changed to:

  1. instream flow needs
  2. domestic
  3. municipal
  4. irrigation and agriculture
  5. industrial
  6. water power
  7. other."

Transferability

Comments were divided on the topic of transferability of water rights. Some people felt transferable licences would "increase the flexibility" of the licensing system and "free water for other uses." Allowing the transfer of water rights could also provide water for basins that are over or fully allocated:

- "I think maybe assigning a property value to these rights and making them fully transferable within a stream system may offer these people another alternative and take the pressure off the priority system."

- "Transferability of licences both in name of licence and in location of works, should be possible within the limits in a new Act."

- "[A] simple mechanism may be required to split off portions of water rights to two or more new landowners."

Others felt licences should not be transferable fearing that it may create "speculation in water rights":

- "Water rights should not be transferable among users. If water is not being used the Department of the Environment should terminate the licence and then decide where the water should be allocated."

- "Water rights should be specific to the holder and not transferable. An application to transfer should be dealt with as a new application."

Many people commented that if water rights are made transferable the government should closely monitor the system and "have controls in place."

- "Do not want individual water rights holders to be able to trade water rights without government in the process."

For discussion on the buying and selling of water rights, see page 90.

Regional Interests

Several people commented that there should be regional input into the allocation process:

- "We feel that there is merit in considering water priorities and allocations on a regional water basis. This would allow for the consideration of various needs and restraints within different river basins. Certainly the concerns of water management in the south are quite different from those in the north."

- "The regions of Alberta and the needs for water in Alberta are as diverse as is our geography. Amended legislation should provide a framework for evaluating water policy, regulation and management on a regional basis."

- "Regional disparities (north/south, east/west, urban/rural) in water supply, use and management must be recognized in the Act."

Some of those who commented on this topic felt that to allocate water effectively, regional water management bodies should be established to develop basin plans and distribute water:

- "The Act should deal with issues on a regional and sub-regional basis. [It] should be administered on a regional basis as well."

- "Different values of water in different areas should be recognized — basin by basin decisions should be made by a local board."

Participants commented on the benefits of a regionally administered allocation system but were aware of the potential problems. A regional system could provide the following:

- "Quicker response" to problems.
- "Home-grown solutions."
- "Promote economic trends from a local basis."

Some problems could arise in a regional system because of the following:

- "There may not be enough funding."
- Regions "could get over-protective."
- There is a "danger of getting too many water management bodies."

Administration

A major concern was the system of applying for and changing a water right licence. Respondents felt the system should be modified to be streamlined and easy to understand.

- "Policy must be easily administrable at a local level."
- "Department of Environment needs more flexibility within itself--it is too large and cumbersome now."
- "A simple and fair method of altering, revising, and updating deficiencies in old licences is required."
- "Water Rights Branch should be allowed to use the reissuing method, as it is a lot simpler and clearer than the present method of addendum."
- "Clear priorities for how water is allocated."
- "Water rights should be clearly defined, what does the licence entitle the holder to? (Relation to total volume and diverted flow)."
- "Water rights should be issued in volume units."

- "Rate of diversion should be re-negotiable based on management decisions -- need more flexibility."

- "Licencing should be based on low flow years."

Several people advocated requirements for licence applicants to provide more information on the potential effect of their licence on water supplies, while other suggested exemptions to the process:

- "Applicants [should] bear responsibility for showing the impact their withdrawal licence would have on water quality."

- "In the interest of efficient regulatory processing we recommend that water resource and allocation projects that have been publicly reviewed during an EIA be exempt from further public review before licence approval."

Many people suggested that minor diversions and projects, such as dugouts, should not require a licence because of the expense and inconvenience of obtaining one.

- "Little is to be gained by limiting or restricting the consumption of water from dugout sources on agricultural land."

- "Dugouts should not be licensed."

Conversely, some felt that all uses should be licensed:

- "Everyone who uses water should have a permit."

Aboriginal Water Issues

Most comments were related to aboriginal water rights claims:

- "Native ownership of beds and shores of lakes and rivers on their property should be recognized."

- We need "legislation recognizing the historically inherent nature of native water rights and establishment of a water management code."

- "The government needs to formalize/finalize aboriginal water rights before passing new legislation. Otherwise we will have legislation that will spend its entire time in the courts."

- "Native issues must be addressed and resolved."

- "If decisions are made in future court cases, which give aboriginal peoples the water rights they claim and the ownership to the beds and shores, it is mandatory that the law stipulate a person's right to navigate a craft on the water."

Some commented that native people should be consulted regarding allocation of water within their lands:

- "Input of native people in process of determining policy and management of water within the boundaries of Indian lands, more specifically regarding apportionment or allocation."

Groundwater Rights

OVERVIEW OF PUBLIC COMMENTS

Many people were concerned that potable groundwater should be protected for domestic consumption and that industrial uses of potable groundwater, such as oilfield injection, should be limited. Others felt that, rather than giving one type of use priority over another, the economic benefit generated from a groundwater using activity should be an important factor in making decisions regarding the allocation of groundwater.

Any use of groundwater should not deplete aquifers or affect their quality. To this end, users licensed to divert large quantities should be required to recycle the groundwater they use, multiple zone completions should not be allowed and licensees should be responsible for ensuring that their withdrawals do not negatively affect aquifers.

Similar to the public concern about the protection of existing surface water rights, some people felt that there was a need to protect "existing licences if the provisions of the Act change." Any changes to the legislation should be regionally sensitive and simplify the licensing process.

YOUR COMMENTS

Allocation of Groundwater Rights

The majority of people felt that domestic use of groundwater, including for livestock, should have the highest priority.

- "People and animals should be first in line to access groundwater and their continued use assured before any other uses are permitted."
- "Groundwater should be strictly for domestic use or livestock water in areas where it is scarce. One area in particular is South Eastern Alberta."
- "Maintain domestic groundwater use as preference over all other uses."

Many people felt that oil well injection to enhance the recoverability of oil reservoirs was a wasteful use of potable water. It was acceptable to use saline or otherwise non-potable water for injection purposes.

- "Potable water should not be used for oil field injection."
- "Discontinue use of potable groundwater for oilwell injection if an alternative is available."
- "To the extent possible, groundwater unsuitable for other purposes should be used for pressure injection purposes."
- "Under no circumstances should potable water be used for oil field injection if saline water is available."

Many comments stated that, in general, industrial use should be limited.

- "Industry should only be able to use 20% of available head, not 50%."
- "Use of potable groundwater for industrial purposes should not be permitted if it will adversely affect the aquifer."
- "Within 5 years, all industrial use of groundwater should be severely restricted and no new permits or licences issued."
- "Many farmers fear the depletion of their supplies of groundwater because much of it is being drawn off by petroleum producers. I think the continued flow of aquifers should be researched before permission is granted for industrial uses."

There were a few comments stating that the use of groundwater for oilfield injection should not be prohibited.

- We "believe that fresh groundwater should be available for purposes other than domestic uses. For example, a typical oil field use is the technique commonly called water flooding. Water flooding is a proven method of improving the overall volume of oil produced during an oil reservoir's life." We also "support the typical protection measures written into water allocation permits that prevent the 'mining' of groundwater resources."
- "Using water for oil field injection may be more desirable than using it for an acreage resident or for irrigation. What is the return on the barrel of water used? Will a barrel of water provided for irrigation be worth more than a barrel used to flood an oil reservoir?"

Other comments focused on considering the potential economic benefits when allocating groundwater.

- "Groundwater management is an essential component of mining operations. Any restriction on [our] ability to pump groundwater at our mining operations could seriously affect the economics of the operations and the safety of personnel."

- "Adoption of a groundwater allocation policy that is equitable, efficient, sustainable and made with respect to cost/benefit considerations."

- "Prioritize groundwater on the basis of value to the community as a whole."

Opinion varied on the allocation of groundwater for irrigation and other agricultural purposes. Many people felt that, along with oilfield injection, groundwater should not be used for agricultural purposes, while others thought the priority of agricultural use was not high enough.

- "Groundwater in South Eastern Alberta should not be used for oil field use or irrigation because of its scarcity and limited supply."

- "There is some problem with municipal uses having priority over agricultural uses. In some areas agricultural use is the lowest in priority and farmers need water to keep their farming business going."

- "Landowners should have priority access to groundwater for agricultural use."

Conditions of Groundwater Use

Recycling should be a requirement of groundwater licences especially for industrial users, was the feeling expressed.

- "Industrial use of groundwater should be curtailed as much as possible by requiring oil companies, pulp mills, etc...to clean and recycle their used water, and the resultant toxic components should be sent to Swan Hills for disposal not released into surface water areas."

- "Recycling requirements for industrial groundwater users should be expanded."

- "Expanding recycling requirements for industrial groundwater users is an excellent idea. I cannot believe that in this day and age industry is still using clean drinkable water for well re-injection."

The following comment was also made:

- "Why are industrial users singled out from agriculture and other major users?"

Groundwater rights holders should take responsibility for the effect of their activities on the aquifers.

- "Require groundwater users to demonstrate that their withdrawal will not affect the quality and quantity of the aquifer."

- "Groundwater rights are inseparable from land or property rights. The responsibility of water quality will rest with the property owner."

The use of multiple zone water wells was criticized as a possible source of groundwater contamination.

- "In the drilling process care should be taken to prevent the mixing of different level aquifers."

- "We must stop, immediately, the use of multi-zone completions of water wells. ONE ZONE PER WELL! In one fell swoop a contaminant will find its way into every aquifer in a given area. I cannot believe that this was even permitted."

- "Need to protect against cross-contamination between aquifers on new and existing wells. This should be done quickly."

Groundwater Protection

Participants demanded that protection of groundwater quality and quantity must be made a priority in the review of water management policy and legislation. The quality and quantity of groundwater should be protected in the same fashion as surface water.

- "Groundwater and surface water demand must be reduced. More must be left to allow natural ecosystems to function. Continued withdrawals of groundwater may be negatively affecting wetlands and springs, both of which may be very productive or support rare or endangered species.

- There should be "more protection of aquifers from overuse and more monitoring of use."
- "Over-utilization should be prevented through a management plan for aquifers."
- "Allocation of groundwater should be strictly controlled and amounts used kept to a minimum."
- "To maintain quality, minimum groundwater needs should be established (same as IFN in surface streams)."
- "Uses for purposes other than domestic and municipal should be limited (e.g., oil-well injection, irrigation), and unlimited domestic use should not be guaranteed."
- "To protect the groundwater supply, some rules for subdivisions and rural areas have to be established."
- "Legislation, including standards, should be established to protect groundwater quality and quantity."
- "Existing legislation does not provide the legal framework for adopting a policy that restricts groundwater usage, nor does it support the issuance of term licences."

Industrial use of groundwater concerns many Albertans:

- "We can no longer tolerate industrial pollution."
- "Greater care must be given to the withdrawal of groundwater for industrial and exploration uses."
- "Require EIAs of major surface developments to include impact on quality and quantity of aquifers."

A lot of attention was given to the protection of water recharge areas. Of major concern was the need to isolate and protect groundwater recharge areas from development and contamination, to ensure security or groundwater quality.

- "The protection of recharge areas MUST have the highest priority."

- "The government should establish guidelines for the protection of groundwater recharge areas."

- "The protection of recharge areas should be put in legislation."

- "Groundwater contamination can have serious effects when one considers that groundwater is very slow to move and may be in the ground for thousands of years. Prevention of groundwater contamination is a serious need to protect the health of Albertans."

Participants requested that more attention be given to sources of contamination of groundwater, and that an inventory of all sources of pollution be done. They felt that groundwater must be protected from contamination related to agricultural and industrial activities. These activities include limited unregulated seismic activity, drilling activity, deep well injection of waste materials, seepage from settling ponds and underground storage tanks, seepage into the ground of sewage, chemical spills, pesticides, fertilizers, manure, road salt, landfills, improperly operated septic fields, golf courses, and polluted surface water.

- "I want the government to look closely at the sources of pollution. For example, in agriculture where an enormous amount of pesticides seeps into our rivers and groundwater. It is there where the government should be spending their money."

- "More stringent control of landfills, effluent ponds, and composite lining for ponds."

- "Disposal of toxic or foreign substances by underground injection should be terminated. These substances should be neutralized or disposed of in special treatment facilities or recycled."

- "No more deep well injection of waste materials."

- "Drilling of water wells at drilling rigs (oil) should be prohibited because of potential contamination. Need good control of disposal of contaminated drilling fluid (sumps, etc.)"

- "The main concern in my area is oil development. Seismic operations change the flow of water. Dynamic explosions shatter the limestone layers that are generally above water, causing damage to aquifers."

The monitoring and control of groundwater quality and quantity has to increase to ensure contaminants will be recognized and the polluting sources identified, pointed out participants.

- "Groundwater data collection programs should be expanded at shared cost (government and users)."
- "Data collection should be a fairly high priority, especially in those areas where groundwater is in high demand by domestic and/or industrial users."
- "Water systems close to industry should be monitored. Groundwater monitoring programs should be a condition of plant licensing."
- "Existing groundwater mapping should be updated."
- "Monitoring on the movement of groundwater should be improved or ensured."
- "The capability of groundwater for various consumptive uses should be evaluated."
- "A full inventory of all wells and surface water in the Province should be completed."
- "An annual inventory of groundwater use (including domestic) should be conducted."
- "Monitoring data regarding water wells and aquifers supplying them should be made available to the public."
- "If a requirement of using groundwater is data collection, then companies should know this up front and be prepared to pay. The government agency should still conduct spot checks to ensure accuracy of data collection."

The protection of groundwater resources needs which address the ground/surface water relationship was pointed out in the discussion:

- "Groundwater and surface water quality and quantity are interrelated. The depletion or contamination of one will eventually lead to a deficit in quality and quantity of the other. Surface water finds its source in groundwater fed springs, and much groundwater results from surface water entering aquifer recharging areas."

- "The interaction of groundwater systems and surface ecosystems should be explored in greater detail."

- "Surface-groundwater interaction needs to be addressed in legislation."

Participants felt the use of groundwater must be sustainable:

- "Any uses of groundwater must only withdraw an amount that is able to be replenished. There must be no depletion of groundwater resources."

- "The prevention of groundwater contamination, as well as its conservation, must be a priority to protect this resource and keep it for future users."

Administration of Groundwater Rights

Many concerns expressed over the administration and allocation of groundwater rights were similar to those regarding surface water.

Participants felt regional concerns must be addressed:

- "Allocation of water rights from groundwater sources must be regulated by the provincial environment department. Local concerns must be addressed through advertisement process."

- "Groundwater should be managed on a regional basis."

Comments suggested that groundwater licences should be allocated for a fixed term:

- "Legislation should include policy to restrict groundwater usage, and licences should be granted for specific terms."

Some respondents felt that smaller users should be exempt from licensing requirements or have a simplified licensing process:

- "Simplified methods of licensing smaller volume water wells developed for domestic and stockwater use to protect both the user and integrity of the aquifer."

- "I do not think individual water wells on farms or acreages should be licensed."

A variety of other concerns were expressed about Alberta Environment's licensing procedures:

- "Same rules should apply to green area that apply to white area."
- "Water Resource Administration Division's [of Alberta Environment] efficiency can be improved by removing the need to license saline groundwater. This resource could be managed by the Energy Resource Conservation Board through the Oil and Gas Conservation Act."
- "Current groundwater licensing process [is] too reactive--waiting for problems to occur."

Water Quality and Quantity

OVERVIEW OF PUBLIC COMMENTS

The protection of water quality and quantity is of major importance to Albertans. This issue was in the centre of public discussion in the review process and generated numerous comments. The magnitude of the response and the tone of comments indicate how strongly Albertans feel about water and its protection.

Some aspects of water quality and quantity have been discussed in the "Protection of the Aquatic Environment" section in relation to the protection of surface water and groundwater, and in the "Water Resource Planning and Decision-making" section in relation to instream flow needs. This chapter will address some other aspects of the issue which were also important to participants.

Water quality is governed and ensured by the proposed Alberta Environmental Protection and Enhancement Act. Many of the comments made by participants were related to issues, such as potable water, pollution control, water quality standards and enforcement, that were dealt with through the public review of that legislation. While the new water management policy and legislation will not be directly responsible for water quality, it is important to address how the management of quality and quantity should be linked.

YOUR COMMENTS

Water Quality and Quantity

Participants were concerned with water quality and quantity now and in the future:

- "Clean water not just 'water' is our most valuable renewable resource."
- "Water quality and quantity are the 'birth right' of Albertans."
- "Therefore, local authorities, industry, and private individuals, have no right to pursue their own interests and pollute and destroy water quality and quantity in the process."

- "No one should be permitted to impair water quality any more than he is allowed to infect wildlife with disease."

- "There is no excuse for any human activity to adversely affect either water quality or quantity in this day and age."

- "Water quality must be maintained even if it sacrifices industry. Some time in the future, our fresh water supply will be extremely valuable. Look at California--we may someday pipe fresh water to them at a higher value than we sell our natural gas."

- "No deterioration of surface or groundwater quality should be tolerated. The necessary steps should be taken to improve quality."

- "Very tight restrictions and controls be implemented to ensure our fresh water quality is maintained. Think of it as a long-term bank account, it may appear that we are receiving little interest on our money now, but our grandchildren and their children to follow will thank us for that investment."

Water Quality/Quantity Interface

There was overwhelming support for the idea that water quality and quantity are interdependent, interrelated, interconnected, and as such, they should be dealt with in conjunction.

- "The quality and quantity of water should be planned together because water quantity affects quality."

- "Both water quality and quantity aspects need to be jointly addressed."

- "Shared responsibility for water resource management should include water quantity and quality."

- "It is essential that the relationship between stream flow and water quality be considered in all aspects of water resource management."

- "Dilution is not the solution to pollution."

- "There should be no compromise in quality to compensate for quantity."
- "Match uses with quality."
- "Water quantity and quality should be the key criteria for river basin planning, with all other planning (e.g., land use planning) subordinated to those criteria--with no exceptions."
- "Some general water quantity/quality planning principles should be legislated, with selected principles for each basin to reflect its unique characteristics."
- "Legislation is the most appropriate means to support the integration of water quality/quantity relationships in water management decisions. Policy is too easy to change or manipulate by those in charge."
- "New guidelines will have to be initiated to include both the quality and quantity."

Watershed Management

Many comments focussed on activities within watersheds and their effect on water quality and quantity:

- "Water should be protected from contamination from any source, whether it be recreational, industrial or agricultural."
- "Logging/industrial land use practices should be examined and possibly restricted or subjected to a greater degree of control for water quality."
- "No grazing of cattle in wetlands or small streams."
- "All livestock fenced away from water."
- "Farmers should be regulated, as brooks, streams, sloughs, and lakes are greatly degraded by cattle."
- "The use of fertilizers and chemicals within a minimum distance from all water-ways should be established and enforced."
- "Discourage land filling which threatens groundwater."

- "The transport of hazardous materials, including oil, on or near waterways, needs to be re-evaluated. Tougher standards, and, in some cases, elimination of such transport are required."

- "Sewage treatment must be improved."

- "Forbid dumping sewage into rivers."

Some suggestions were offered on what to do to prevent water contamination from the effects of runoff:

- "The extent and nature of pollution problems associated with run-off needs further investigation."

- "Non-point source pollution is a problem because of the diffuse nature of the source of contamination."

- "There should be full disclosure of which pesticides and herbicides are used within a drainage area."

- "Some of the chemicals used on farmland running into the surface water affect the public and increase the costs to society (i.e., human effects from exposure to toxins, the human cost of disease and loss of natural heritage, cost of water treatment). We all pay these costs and must be aware of them."

- "Agriculture, roads, and forestry have an impact on waterways and water quality. These effects should be identified and recognized as cumulative, and work should begin to eliminate them."

- "For water quality regulations and enforcement, run-off from livestock feedlots and crossings must be dealt with under the same laws as chemical pollutants. Enforce the laws!"

- "Implement restrictions on land uses in nearby water bodies."

- "Clear cut logging creates problems like fast run-off--control this."

- "Regulations should be made against dumping used oil on roads."

- "Control run-off from the surrounding areas around lakes to ensure water quality."

Return Flows

This subject received a relatively small number of comments. Among those who commented, it was generally agreed that in order to protect the quality of water, we need "better quality returns" to the water system.

- "The use of surface and ground waters, and their return to the system is a key challenge, so that water quality is not compromised."

- "A uniform standard for water quality should be set for all water bodies receiving return flows. For specific rivers or bodies of water, perhaps higher levels of treatment should be specified. All discharges should be treated as equally as possible--whether large or small."

- "The public would like more information on actual water use (e.g., information on water going into districts, efficiency of use, return flows, etc.)."

- "There is a concern, however, as to how the water quality will be measured. There would have to be some mechanisms for measuring the quality of water at the inflow stage and again at the outflow stage to determine the net contaminants."

Controlling Water Quantity and Quality

Although the control of water quality will be ensured by the proposed Alberta Environmental Protection and Enhancement Act, many said water management policy and legislation should include both water quantity and quality criteria, objectives, and enforcement requirements with provisions for periodic review.

- "More controls to protect quality of ecosystems against overuse, diversion of water."

- "Higher standards to improve water quality, maintenance of healthy ecosystems, and meeting different needs in different areas."

- "Water quality guidelines/objectives should be in place prior to allocating water

(before withdrawal is permitted), and should be part of the river basin plan."

- "We feel that the mandate of Alberta Environment should be expanded, particularly in the aquatic area, to include all things, occupancies, developments and activities that have an impact on water and water quality."

Measures should be taken to ensure that water quality is maintained at present day standards and also improved where possible. This requires much more detailed monitoring, as well as updated assessments of our water resources. Requests were made concerning the following specific points:

- "Need well-established methods to determine cumulative effects on quality and quantity."

- "Monitor existing users for quantity and quality."

- "Ensure better monitoring of surface/groundwater for quality and quantity."

- "State of Resource reporting and forecasting specifying quantities and qualities should be initiated."

- "The professed goals with respect to water, namely to protect and enhance the quality of our water resource, and to promote the wise and efficient management and use of water, are quite meaningless unless we start here, now. We have the resources and technology. The only questions are: 'Do we have the will and determination?' 'Do we have all the examples?' 'Do we care?'"

Water Management Projects and Programs

OVERVIEW OF PUBLIC COMMENTS

A wide range of comments relating to water management projects and programs were submitted. These comments were diverse in nature with many opposing views reflecting regional concerns and conditions. The respondents indicated a deep concern for economics, funding and environmental impact of present and future water management projects. While the majority of those who submitted their view supported the development of more water management projects, they also made it clear that they want these projects to maximize benefits, be economically justifiable and have minimal environmental impact. The respondents placed a high value on Alberta's water resources and expressed their desire that the government re-think water management policies.

There was a general feeling that projects should be managed to promote conservation through better efficiency. Also needed are more and better project planning, an improved approval process, and more public education about water management projects.

YOUR COMMENTS

Future Water Management Projects

Many of those who raised this issue were in favour of developing more programs and building additional water management projects. This issue more than any other reflects regional concerns and conditions. Most of those in favour were from the areas of East central, and southern Alberta where water is in short supply. The comments of those who want more water management projects did not generally specify a project type or project location.

- "Need more water storage--on stream and offstream."
- "Get water to the drought areas where it is needed."
- "More water control structures to ensure community water supplies."
- "We in Southern Alberta need all the water we can get. Montana has more than one dam on all their rivers. We are in an area that is normally short of water so I say manage water to the maximum."

"Non-structural" solutions and a more efficient use of existing structures and allocations were suggested as an alternative to extensive development. Where future water management projects are proven to be necessary, offstream development was the option of choice:

- "Less intrusive ways such as natural and non-structural solutions should receive research and project dollars prior to traditional (dams) methods."
- "We have enough dams. Offstream facilities can be used to satisfy the legitimate consumptive concerns of municipalities and agriculture."
- "Structural solutions must be considered as a last resort. Better conservation, research, planning and education are needed."
- "Discourage farming/ranching/development in marginal areas that require major changes to existing water infrastructure."

In various comments, the public was concerned with the environmental impacts, economics, and approval processes for projects.

Irrigation

The subject of irrigation projects generated controversial opinions. Some of the participants supported the idea of developing more irrigation projects:

- "Potential irrigation projects should be investigated, and developed at the earliest possible date, if feasible."
- "Make better use of spring run-off--store and use it for irrigation later."

Those opposed to more irrigation projects being built felt that too much money was being spent for the benefit of too few people, and that existing systems should have their efficiency improved before any more construction is undertaken:

- "Other methods such as offstream storage, conservation of water, innovative irrigation techniques, new crop varieties and research must be employed and actively pursued."

- "As a dryland farmer, I resent irrigation farmers being subsidized to grow commodities that are already in over-supply."

Flood, Erosion Control and Drainage Projects

There were two opposing positions regarding flood control projects. One view was that there should be more projects and funding available to protect and develop arable land. The other view was that land development in flood-prone areas should be controlled to minimize flood damage.

- "The required [flood control] projects are increasing in both number and size and low current funding levels are delaying construction of these projects."

- "Further flood control should not be used as a reason to ignore the damage such facilities cause. Instead, watersheds and land development along rivers must be managed so as to prevent serious flood damage."

Regarding erosion control, some stated that flooding had to be controlled because it contributes to erosion problems. Another concern was that erosion control needed to an integral part of project planning, operation, and reclamation. Erosion and drainage concerns were often linked in the discussion:

- "Water should be managed to limit loss of top soil if required, proper channeling must be done."

- "Reduce soil erosion by controlling drainage and better planning of drainage networks."

A concern was expressed that northern Alberta should recieve drainage projects but that this area was not getting its fair share of funding to allow such developments.

- "If the Northern country does not drain water properly, all top soil will be gone and the land damaged permanently as it is in the South."

- "Once water is drained, money must be available to maintain drainage ditches and some agency to be responsible."

Lake Stabilization

This issue created a lot of controversy. Some participants strongly supported management of lakes, some strongly felt that "lakes should be left alone." The topic of lake management was discussed in more detail in the "Water Resource Planning and Decision-making" section. These few comments are repeated to illustrate the public's views on lake stabilization.

- "Expand programs of active lake management, (i.e.,water quality enhancement, lake level stabilization and augmentation)."

- "Lakes, like river basins, need to be managed. Water uses from lakes must be prioritized to provide for some direction when lake levels fall."

There were some against lake stabilization:

- "Lake stabilization should be discouraged."

- "Lakes should be left to nature."

- "Increases and decreases in river and lake levels are natural and play important roles in the natural system; therefore, stabilization of lake levels for human benefit is not compatible with the principles of sustainable development."

- "Management abilities are not advanced enough to 'charge' ahead with any 'megaprojects' of this type."

Hydroelectric Development

Some comments favoured hydroelectric development because of the benefits of these projects:

- "Hydroelectric projects supply much needed energy across Alberta, provide flood control, don't consume water, and they regulate river flow levels."

- "Private hydro development can provide Alberta with clean, renewable, low-cost electric energy but in order to make a greater contribution to the provincial econo-

electric energy but in order to make a greater contribution to the provincial economy, attractive sites must be developed."

Some participants added a note of caution or were critical of these projects:

- "Control of dams by power companies needs to be regulated. There has to be minimum as well as maximum flow requirements in their licences."
- "Alberta is one of the few Provinces without large hydro projects and it should strive to stay that way."
- "The destruction of parts of our precious, freely flowing rivers for the sake of hydroelectric generation of energy is unacceptable and must be prevented by legislation."

Recreation

Many participants felt that recreational use should provide additional benefits to a large number of people, and that planning of water management projects should take this use into consideration.

- "Should consider all possible benefits from potential projects when considering approval. e.g., benefits from recreational fishing in reservoirs."
- "Recreational potential for water from control structures--in future the development process must consider recreational, e.g., canoeing use--in early planning and design stages."
- "Acknowledge recreation as an important use of water."
- "Recognize the growing importance of water-based recreation relative to agriculture and industry."

Who Should Control Projects?

Many people thought that the Province should retain control over water management projects because the government has the necessary expertise and resources.

- "The Province should continue its role in large water management projects. Since

the costs are large and the benefits are accruing to a wide range of interests, the provincial government is the best organization for undertaking these projects."

- "The Province should have primary and leadership role in developing future water management projects and in mitigating the damages caused by water in its natural state."

Some people disagreed and felt that a combination of government and private control would be better. A few advocated the complete privatization of these projects.

- "The Chamber recommends that the government undertake research activities for the purposes of assessing the potential of and criteria for the privatization of water management projects in Alberta as opportunities arise."

- "We are not opposed to the private ownership of water distribution systems as long as a private monopoly of water is not created."

Some comments expressed the view that projects should not be turned over to local authorities or municipal governments, as respondents felt these bodies are not equipped to manage them properly.

- "The Province must retain a role in water management projects. Local authorities whether municipal or irrigation districts, have too much of a vested self-interest (often financial) to properly evaluate or manage regional issues."

- "Local authorities do not have expertise, do not have funding and cannot co-ordinate a wide number of projects that extend to more than one municipal authority."

Participants felt that increased co-operation among all levels of government is needed in the planning and operation of these projects.

Environmental Impact Assessments (EIAs)

There was a large response to this issue with a lot of support for EIAs. Almost all these respondents felt that EIAs should be mandatory for almost all water management projects, and that these should be conducted independently, be broader in scope and be enforceable.

The comments made were direct and emphatic, reflecting Albertans' deep concern with this issue.

- "No further water diversion projects, no more dams, no further manipulation of our water resources without a thorough environmental assessment made independently."

- "All projects involving rivers, lakes, wetlands, and river reaches or flow basins must require an EIA."

- "Every project must address all environmental impacts--comprehensive and mandatory."

- "Environmental impact assessments and social economic assessments for all water management projects, i.e., recreational, agricultural, municipal, industrial, etc."

Other comments stated that EIAs should include the cumulative effect of all projects on a river basin. Some felt that the scope of EIAs and the type and size of projects requiring such an assessment needed to be clarified.

- "There should be a total moratorium on the construction of new dams and diversion structures until the effects, both single and cumulative, of existing structures are fully evaluated."

- "A process should be put in place to assess incremental impacts of all projects."

The role of research in properly conducted EIAs was emphasized. Such research would need to include long and short term impacts at and around the project sites, as well as downstream effects.

- "Need adequate understanding of water systems prior to any development."

- "The long-term effects of dams on downstream ecosystems must be understood in order to evaluate the impacts of proposed new dams. This is especially true of riparian habitats in the semi-arid regions of Canada, and probably applies to other natural regions."

Funding and Economics

Who should pay for the construction and maintenance of water management projects concerns Albertans. Some participants felt that project funding should be shared between government and user.

- "All Albertans are potential users/beneficiaries of water management projects; therefore, they should all accept some responsibility."
- "Individuals who benefit directly from water works should pay."
- "Users should pay for maintenance and operation of water conveyance systems."

Some participants suggested 100% government funding while others requested 100% private funding.

- "Provide 100% provincial funding for projects which provide benefits to a large number of Albertans."
- "Private enterprise should drive water projects as much as possible and in doing so reduce government costs."

There were suggestions that users of a system(s) be charged on a cost recovery basis.

- "Cost recovery should be pursued where feasible and where direct benefit to individuals or groups can be established."
- "Water should be available to all users on a no-cost for consumption basis. However, operation and maintenance costs for water delivery systems could be apportioned on a consumptive basis."

Albertans are very concerned with the criteria for funding water management projects. Many strongly felt water management projects must be economically justifiable. There was criticism of existing projects that were considered uneconomical.

- "The benefits of most water management projects do not outweigh the costs (economic or environmental). Emphasis should be on demand management not supply management."

- "Spend the money proactively rather than reactively."

- "Economic and cost/benefit analysis should be done on all projects prior to approval. This analysis should include the 'real costs' of construction and development as well as projected maintenance costs. Also the 'real' environmental cost has to influence the decision."

There was also concern with projects which offer limited benefits or benefits for a limited number of people.

- "Projects should be of far reaching public benefit, not to just a few in the immediate area. Any project that benefits only a few should not be entitled to public funds."

- "Highly questionable secondary benefits have been used to justify dubious projects. This must stop."

- "Too many 'White Elephants' financed with government money for the benefit of only a few individuals. Must get rid of this system!"

- "While the buzz word is multi-use, the fact is most water management projects are single purpose in nature. Other benefits that are derived from them are often unplanned or fail to develop to their full potential."

Aboriginal Peoples and Water Management Projects

It was felt that aboriginal peoples must be consulted when projects are built on or have an impact on their land.

- "Have an Indian Commission reviewing large projects and make recommendations (that have to be followed). People tend to trust Indians more than anyone else when it comes to environment."

- "When a project is built on Indian land, be sure the Indians are fully involved in planning and approval."

Emergency Planning

The issue of emergency planning was raised regarding what to do if a dam fails.

- "Preparation and periodic validation of emergency preparedness plans for all dams."

Water Conservation and Pricing

OVERVIEW OF PUBLIC COMMENTS

One of the more frequently discussed topics both at the public meetings and in written submissions was water conservation with its associated issues of water pricing and metering. A full spectrum of comments was received. Comments were generally supportive of the need for water conservation, but there was little agreement about which approaches to achieving water conservation would be most effective and acceptable. Water conservation was typically viewed in terms of either increasing water use efficiency or reducing waste, and suggested mechanisms included education, new research and technology, licensing and enforcement, metering and pricing of water.

YOUR COMMENTS

Need for Water Conservation

Water conservation was seen as a key element in a new approach to water management:

- "The focus of the Act should shift to sustainability of the water for present and future generations (conservation, not consumption)."
- "A new water management strategy must focus on controlling demand, and must use a variety of political, social and legal techniques to address both supply and demand."
- "An alternate approach, which focuses on reducing consumption and using water efficiently, can control the demand for water and decrease the need to use new supplies."

Water conservation was also perceived as a means of improving water quality and increasing environmental protection:

- "Water conservation should include maintenance of instream flows, water quality and aquatic ecological process."

Most commonly, water conservation was seen as an effective way of reducing or solving problems of water shortages, either when short-term problems arise or when basins become fully allocated:

- "Water conservation should be actively practised by all consumers to reduce the effect on natural low flow periods."
- "Conservation is one of the major areas where additional water supplies can be 'found'...."
- "Water conservation projects and programs should be used as an effective (and generally economically sound) means of making more water available."

Education

Most participants believe that water conservation can best be achieved through education instead of using laws and regulations.

- "Emphasize education/awareness as opposed to increased enforcement."
- "Water conservation could be a part of the environment education curriculum to bring public awareness in this important topic."
- "The public should be educated to understand the true value of water and thus be encouraged to start conserving."
- "An informed public makes better decisions and offers better input and will co-operate with government better."

Research and Technology

Increased use of water-efficient technology and additional research and development were often suggested as appropriate means for achieving water conservation.

- "The most cost-effective results for conserving water and increasing use efficiency come from the management of water and equipment purchase."

- "Municipalities with a high per capita water use must implement programs of conservation, e.g. offer water restrictors for bathroom taps at a reduced price, as part of demand management."

- "As irrigation is by far the largest consumptive user of water in Alberta, and the knowledge and technology are available to achieve large gains from conservation programs here, this should be a prime target of investment in conservation."

- "Other methods such as off-stream storage, conservation of water, new crops and inventive irrigation schedules for water use, must be employed and actively pursued."

- "Expanding recycling requirements for industrial groundwater users is an excellent idea."

- "Force companies to limit their water use and implement water recycling and zero discharge of waste water."

- "Research and development needs to be done to develop and improve water conservation technology and practices. Water conservation technology has the potential to become an economically viable enterprise and the government should support this potential."

Licensing and Enforcement

Many comments supported a more active approach to water conservation through licensing and enforcement:

- "Water conservation could be encouraged through reduced limits over time in the licences."

- "Any priorities for use of water must be socially justifiable and be afforded to a particular user on the condition that the strictest conservation measures have been implemented."

- "Conservation and protection requirements should be clearly spelled out in permits granted for ground and surface water use."

- "As a condition of all water withdrawal licences, applicants must demonstrate use of best available water conservation or recycling technologies in system design."

Water Metering

There was considerable support for more extensive use of water metering. Metering was viewed as a way of making people more accountable for the amount of water they actually use, especially when combined with water pricing. Metering was also supported because participants felt it would provide more of the information required for effective water management and would serve as a means for better enforcement of the terms of water licences.

- "The Act should legislate requirements for metering as this will no doubt provide the greatest incentive for conservation."

- "So much of our water is wasted. What better way of controlling this than putting a water meter in every home and business possible in Alberta. People pay attention when hit in the pocket book."

- "All projects (irrigation) should be measured so that we can obtain an accurate amount of how much water is being used and to see if it ties in with the amount allocated."

- "Everyone should be on meters and have to pay for the water they consume. That way perhaps everyone might be more aware of the amount they actually use and be encouraged to cut back and conserve."

- "Once again, metering of water use will be essential and the Department will need to have appropriate measurements which are used to define the annual resource."

Opposition to metering focussed mainly on the cost, although some people felt that meters were unnecessary and infringed on their rights to use water.

- "Why should I as a rural domestic user, who pays for drilling the well, putting in the plumbing and paying for fixing it when it breaks down, also have to pay extra in the form of a water meter. Metering would be adding insult to injury."

- "Many people consider any form of pricing as an infringement of their inherent right to water as a necessity of life."

- "Money diverted into metering and pricing costs would then be unavailable for improvements in the efficiency of water conveyance systems."

Water Pricing

Water pricing was the most contentious aspect of water conservation. Many people advocated increased use of water pricing and a user-pay philosophy:

- "When you have to pay, conservation and proper use will follow."
- "Because water is a natural resource, users must be encouraged to recognize the value of the water they use and the associated costs of providing it."
- "Although I personally do not really want to pay more for the water I use, I believe that until it costs us substantially more for water we will continue to squander it and unnecessarily pollute it before putting it back into our rivers and lakes."

Other people were opposed to water pricing or had strong reservations:

- "Water pricing is not an incentive, it is a penalty."
- "I disagree with the distribution of greater portions of the costs of water management projects to direct beneficiaries of those projects."
- "Can't put a price on water, the rich get it and the poor don't."
- "I am concerned that water pricing could result in higher food costs."

Many comments were supportive of the idea that water users should have to pay their full share of the cost of water service, but there was some disagreement:

- "User pay principle should be implemented immediately! All users, municipal, industrial, agricultural, etc. are basically receiving the commodity (water) for a fraction of its 'real' cost."
- "To the extent that individual users make demands on such publicly-funded infrastructure, they should be included in such a pricing scheme."
- "Government policy must include an end to subsidization and a shift toward user pay for infrastructure and headworks, canals, etc.; and for operation and maintenance, rehabilitation costs."

- "Water charges and water rates which encourage conservation are contrary to the cost service method used to determine water and sewer rates."

Comments were divided as to whether water users should actually have to pay an extra charge for the water they consume, like a water tax or royalty:

- "Royalties and user fees have been instituted for the use of our other natural resource extraction industries and, with the exception of hydro electric generation, no user fees have been implemented for our most abundant resource—water."

- "No pricing for water over and above the cost of service."

- "Everyone should pay for water over and above the cost of infrastructure and delivery."

- "Water pricing, above the cost of servicing, [should be] instituted for all consumptive uses to recognize the value of the resource."

- "Consumptive pricing is not necessarily a sustainable conservation measure nor is it easy to equitably rationalize."

There was also disagreement over who should pay for the construction and operation of future water management projects:

- "Government should only be involved in providing water for households. Anything else, i.e. irrigation or industrial, should be built by users."

- "Those that directly benefit from a water development project should pay a significantly greater share of the costs."

- "In regards to installations of water use systems, the government should be responsible for the majority of the costs with the balance negotiated between end users and their agencies."

- "Expand programs of technical and financial assistance to landowners and local authorities for dealing with water related problems."

A number of people suggested that some form of water pricing be used to reduce pollution and improve water quality:

- "Consider 'pollution' tax based on water inflow/outflow for plants and municipalities as a whole, and individually."
- "Equally important is the need to charge polluters for reduction in water quality."
- "Both industry and municipal discharge should be taxed in a graded manner to reflect content toxicity and organic load."

The buying and selling of water rights was of concern to many Albertans. Many comments showed conditional support for the idea that water rights could be traded or sold:

- "Economic theory and practical experience both tell us that the best method of allocating scarce resources is through a free market. In the case of water this would mean auctioning off water rights and allowing them to be freely traded."
- "Provided appropriate controls are implemented, the sale or transfer of water rights between users and between sectors of the economy may be efficient and effective means of allocating the available supply from a particular river basin or aquifer."
- "Water licences should become transferable and saleable if they are exchanged to uses either in the same priority category, or in a category further up the list."
- "Sale and transfer of water licenses could be considered as long as the proposed use was in accordance with the planning document."

On the other hand, there was opposition to the idea of being able to sell or transfer water rights:

- "Water rights should not be transferable (bought or sold) between users."
- "Our water should never be a commodity to be bought and sold because it could become unavailable or too expensive for some people."
- "Sale of water licenses should not be permitted or allowed so a license for water cannot be used to make a profit."

- "I feel VERY strongly that our water resources (surface and ground) should never be used for monetary gain. It is a resource which we CANNOT live without and must be protected at all costs. It must be available to all citizens rich or poor."

Given the nature and extent of questions and concerns about water pricing, a careful and cautious approach to change was suggested:

- We "recommend a cautious process towards implementing a system of increased fees or selling of water rights, until the effects of cost of service, conservation pricing mechanisms and sustainable development options have been thoroughly evaluated."

- "While increasing costs are inevitable, we would not want to see the consumer bear the brunt of excessively high rate increases in the future, nor jeopardize the competitiveness of existing or new Alberta businesses."

Enforcement

OVERVIEW OF PUBLIC COMMENTS

A common theme expressed by those who participated in the review was the need for strict enforcement. A number of participants felt that the current Act is weak in this regard. The existing enforcement system is "too lax, and in some cases, non-existent". The current practices and policies concerning enforcement are "far too lenient". People felt that the current Act needs better tools to enforce its mandate.

Some participants felt that violations of water regulations and legislation "may need to be dealt with in a similar manner as set out in the proposed Alberta Environmental Protection and Enhancement Act." The public expects that Alberta Environment will enforce the regulations of the new Act "stringently and actively".

YOUR COMMENTS

Enforcement

The majority of comments focussed on what Albertans expect from the new policy and legislation, with regard to enforcement:

- "Legislation should be clear, concise, attainable and enforceable."
- "Legislation needs] more teeth and quicker response to complaints."
- "Enforcement should be fair, with clear cut rules to all violators and fair application of the rules."
- "More strict liability sections."
- "Enforcement of new and existing laws needs to be more effective, with emphasis on PREVENTING problems."
- "There should be full accountability for environmental infractions by industry and government."

- "People in local areas should participate in enforcement, provide advice, recommendations on policy."

- "Provisions should be made for adequate enforcement of all types of water resource violations, and there should be substantial fines for infractions."

- "It is very important that serious issues are dealt with seriously, and the minor infringements are handled appropriately."

Concern was expressed that enforcement be more consistent, without double standards and discretion.

- "Equitable enforcement actions should be based on the following: degree of environmental impact; degree of negligence (if any); record of the offending company (relative to water issues); response of industry to the incident (both administrative and remedial actions)."

- "The law should be the same for everyone".

- "Everyone should be subject to the same provisions and penalties".

- "Too much discretion in enforcement action tends to lead to disrespect for law and authority."

- "Laws should be equally enforced or dropped. Selective enforcement is creating distrust in all enforcement."

- "The opportunity to enforce the Act should be allowed to those municipalities with the necessary credentials and available resources."

Participants felt that enforcement policy should provide a "clear direction for what is required" and that the steps for non-compliance should be clearly defined:

- "Complaint procedures, specific details on prosecution/enforcement of violation, should be rigorously specified in writing in the Water Resources Act: i.e., offence, documentation of evidence, proceedings, records, appeals on both sides, clear instructions for enforcement officers."

- "No anonymous complaints."

- "An application for an investigation should be signed in all cases to prevent groundless claims from being filed anonymously. False claims increase costs, and damage the reputation of a company."

- "If a valid complaint results in prosecution, a notice of violation should be issued along with a voluntary payment system, together with conditions to rectify the situation."

- "A standard Notice of Violation would streamline the process of notifying the offender, and give the offender an opportunity to correct the situation before being prosecuted."

- "A right of entry to conduct investigations must be included in the Act."

- "Stop Orders and Compliance Orders must be initiated to allow enforcement staff the ability to carry out the procedures of the Act. However, there must be 'overwhelming evidence' that the orders are justified, since the consequences would be great in terms of project schedule delay, increased costs, and corporate reputation."

- "An appeal process must be instituted to allow a person his/her opportunity in Court."

- "The appeal process should not require the posting of a bond equal to the amount of the penalty, since in some cases the amount of the penalty could be significant."

- "Create a tribunal to mediate disputes and hear appeals."

What are the Options?

Even though everyone recognized that some form of enforcement is necessary to ensure environmental protection, several participants preferred guidelines and/or agreements to legislation, "as the former are more flexible and able to evolve with circumstances". Some were concerned that an "increasing focus on enforcement could reduce the opportunity for a co-operative industry - government approach to environmental regulations".

- "Prosecution and enforcement are not necessarily the prime tools for achieving good water management. There are options to build consensus and avoid conflict."

- "The performance incentives should be the means of encouraging compliance and

accountability, especially for those who meet or better government requirements."

- "I can agree with the concept of enforcement as a last resort to incentives and persuasion."
- "We support a co-operative approach to environmental enforcement, stressing abatement and compliance."
- "We prefer 'self-abnegation' wherever possible, as it provides flexibility and makes good business sense."
- "A common sense approach should be taken to enforcement, as well as management."
- "Both enforcement and water management need to be a co-operative effort."
- "Stakeholders need to be involved."
- "Enforcement should be used where necessary for non-compliance with control orders, persistent violators, and willful or gross negligence that endangers human health or the environment."
- "The environment would best be served by encouraging parties to utilize environmental audits in order to discover and deal with potential difficulties before they become problematic."
- "Emphasize education/awareness, as opposed to increased enforcement!"

Fines and Penalties

Many Albertans feel that existing fines and penalties for inefficient use of water and for degrading water quality need to be substantially increased in order to provide deterrents and encourage compliance:

- "Current enforcement practices and policies concerning enforcement are FAR TOO LENIENT."
- "I know very few people are worried about penalties because nobody ever gets

caught."

- "I cannot comment on the penalty but it should be such that it will deter bad practice. Bad practice needs to be spelled out."
- "No exceptions! No ceilings on fines!"
- "Maximum fines should be boosted from time to time to reflect the effect of inflation."
- "I do not think some of them worry about fines because the money they make in spite of it covers the cost of the fine. The fine merely becomes a cost of doing business. But if a fine would be levied that would cripple a corporation, perhaps the stakeholders or owners of that company would not allow it to continue to violate the environmental laws."
- "Might consider a penalty based on 'ABUSE IT AND YOU LOSE THE RIGHT TO USE IT' plus a fine, or additional fines, should be specified as percentages of a company's monetary gains while in violation (e.g. 110%)."
- "Penalties should be fair and applied consistently."
- "They should be substantial and appropriate for the scale of the impact, especially to repeat offenders."
- "A progressive system of incremental fines may be effective for repeat offenders."
- "A ticket system would help to streamline the payment of fines in the cases of minor violations, but may not work for more serious violations that are complex and have significant impact on the water resources."

The public suggested various types of penalties to punish violators of water resources legislation including the following:

- "A ticket for minor violations."
- "Stiffer fines and penalties to abusive users (e.g. $1,000,000 and/or up to 2 years in jail)."
- "Loss of any profits created through violation."

- "Removal of allocation rights."
- "Loss of licence."
- "Seizure of irrigation equipment, if a project was set up illegally, and if proponent continues to irrigate."
- "Stop Order for unauthorized activities."
- "Community service in the area of environmental awareness, enhancement."

How Regulations Can Be Enforced?

Many people felt that to achieve the protection and wise use of water resources, Alberta needs stringent and enforceable regulations "on production of all industrial effluent," "stricter regulations in granting licences," and "plans with teeth setting defined limits". Enforcing the numerous new regulations resulting from the creation of a new Act concerns many Albertans. A lot of uncertainty was expressed about this issue in the review process. Many suggestions were offered:

- "Will additional inspection staff be hired to ensure that regulations are adhered to?"
- "Will those found guilty of breaches to the Act and regulations be punished in a manner to fit the crime?"
- "Looks like it would be too much trouble to implement."
- "Who will enforce? Difficult to get conviction."
- "Cannot get any action at present."
- "You must be kidding. Existing Acts have this potential, but if the stick is never used, what good is it?"

Staffing

- "Alberta Environment would need sufficient enforcement staff to be able to enforce the regulations of the Water Resources Act."
- "The powers of enforcement officers should be expanded."
- "They should have clear instructions embodied in the Act."
- "Investigators need authority to investigate and stop unauthorized activities that cross provincial boundaries."
- "Make the MINIMUM fine for an offence high enough to cover all costs of investigation, prosecution, conviction and collection. This will make staffing with more investigators possible."
- "Inter-agency co-operation is necessary for better management and enforcement of water related regulations. There should be better co-ordination of Fish and Wildlife, Environment enforcement officers."
- "The role of the public in enforcement should be increased."
- "The public should be invited to provide input into decisions on penalties, and to become a 'watchdog' for the agency responsible to the government and public."

Cost

- "Any cost incurred by the Crown in correcting situations by doing enforcement work should be payable by the offender, as legislated now in the present Act."
- "Government should fund immediate corrective action and then go after the person/group that damages water supply."
- "Given a 'blank cheque', investigations could go on for an unreasonable length of

time."

- "Water users should pay part of the cost of monitoring."
- "It should be required that a suitable bond/security be posted to compensate for any damage, particularly with large industrial or agricultural projects."
- "Substantial penalties should assist in the recovery of administrative costs, as well as providing for the payment to restore any unapproved works to the original condition, including erosion control, and stabilization costs."
- "Establish environmental 'super fund' (or 'revolving fund') funded by fines. Money collected would go back into the fund."

Monitoring

- "More stringent control on quality and quantity of effluent returns."
- "Regulatory agencies at all levels of government must be given the authority and resources necessary to monitor and regulate water uses effectively to ensure that Canada's waterways are used in an ecologically sustainable manner."
- "User monitoring will have to be rigidly enforced and closely supervised."
- "Baseline data is a must."
- "Assessment should be the responsibility of the government and not a user."
- "Use more frequent spot checks - no warnings!"

Comments Related to Alberta Environmental Protection and Enhancement Act (AEPEA)

Enforcement of regulations with respect to pollution of water bodies is governed by the proposed AEPEA. Nevertheless, this subject was raised many times in the review of water management policy and legislation. Comments are not listed here because these concerns were considered in the rewriting of the environmental legislation consolidated under AEPEA.

Summary of Public Survey

INTRODUCTION

A public survey was conducted in August 1992. Both rural and urban residents participated by completing a questionnaire on their knowledge of water management issues, what issues concerned them, and how they would like to be consulted regarding these issues. Out of 5959 randomly distributed questionnaires, a total of 955 were returned (16%) which resulted in 945 useable responses. A useable response was defined as a questionnaire with at least 80% of the questions answered.

METHODOLOGY

A detailed description of the survey methodology can be obtained from Alberta Environment but some key elements of how the survey was conducted are listed here:

- The population sample was randomly selected from among all residents of Alberta.
- The sample size was 5959 households. 2959 questionnaires were sent to eight urban centres. For each centre, questionnaires were randomly distributed to postal walks. The approximate number of questionnaires sent to each centre was:

Calgary	600
Edmonton	600
Fort McMurray	250-300
Grande Prairie	250-300
Lethbridge	250-300
Lloydminister	250-300
Medicine Hat	250-300
Red Deer	250-300

3000 questionnaires were sent to towns, villages, and rural areas outside the above eight urban centres. Like urban centres, questionnaires were randomly distributed to postal walks.

SUMMARY OF RESULTS

The following is a brief summary of survey results. The questionnaire is attached in Appendix A.

1. Location of respondent.

Region	Number of Respondents	Percentage
Northern Alberta (Edmonton or north of Edmonton)	401	42.4%
Central Alberta (between Calgary and Edmonton)	217	23.0%
Southern Alberta (Calgary or south of Calgary)	311	32.9%
Did not respond to question	16	1.7%

Setting	Number of Respondents	Percentage
City	501	53.0%
Town or Village	182	19.3%
Rural Area	245	25.9%
Did not respond to question	17	1.8%

2. **How familiar are you with water management legislation and how important are water management issues in this province?**

   - People are very concerned about water management in Alberta and believe it is a very important issue.
   - People are relatively unfamiliar with water management legislation.
   - All age groups consider water to be very important, however, there is a significant difference in responses based on age. Younger people are less familiar with the legislation and treat water issues as less important and with less urgency.

3. **How familiar are you with water management practices in this province?**

   - The majority of most respondents indicated that they "need more information." There were regional differences with respect to knowledge of the licensing system.
   - Younger respondents indicated slightly less need for information.

4. **How important are each of the following water management issues (now and in the future) in your opinion?**

   - People consider water management issues as being important and believe that these issues will grow in importance in time.
   - People want government decision-making, control, and public participation to become more effective. People do not support a "wait and see" attitude. Some indicate that they want the issues addressed effectively and immediately.

5. **Do you agree or disagree with the concepts of water metering and pricing?**

   - People are in favour of water metering.
   - People will consider putting a price on water for the quantity used and degradation of water quality, as an avenue for further exploration.

- There is an indication that people expect they may have to pay to preserve the quantity and quality of water.

6. How interested are you in becoming involved in the review of water management policy and legislation in Alberta?

- People say they are prepared to become personally involved in the policy and legislation review process.

7. How would you like to become involved in the review of water management policy and legislation in Alberta?

- People will participate.
- People will read and discuss media reports.
- People want better information.
- People want public meetings.
- People want government to listen to them.

8. Why do you want to participate and what do you expect?

- People are very serious about the issue of water management.
- People do not see public involvement as having to be "fun"--they want content.
- People wish to be involved in the process and are prepared to get involved providing they can have an impact. They do not seek involvement for involvement's sake.

9. Do you have any advice for the Alberta Government that would assist in water resources management policy and legislation review related to public involvement or water use?

With respect to public involvement:

- To be more aware of what is happening.
- To be listened to.
- To receive better information and more information.
- To see wider public involvement in the process.
- To see more public involvement at the local level.

With respect to water use:

- Conservation of water.
- Restricted export of water.
- Wise water use.
- Strict enforcement and fines for violators.
- Reduced pollution.
- Better water management.

ADDITIONAL INFORMATION

At the end of the survey, respondents were asked to provide some personal information:

AGE PROFILE		
Age	Number of Respondents	Percentage
15-19	16	1.7
20-24	35	3.7
25-34	234	24.8
35-44	278	29.5
45-54	155	16.4
55-64	127	13.5
65 and over	98	10.4
Missing	2	--

GENDER PROFILE		
Gender	Number of Respondents	Percentage
Male	471	49.8
Female	471	49.8
Not Identified	3	.3

Summary of Water Policy Futures Workshop

INTRODUCTION

As part of the Water Management Policy and Legislation Review, the Environment Council of Alberta hosted a water policy futures workshop in Calgary on November 5 and 6, 1991.

The workshop had three objectives:

1. to identify the most important water-related issues of the next 25 years
2. to envision water management futures for Alberta concordant with sustainable development
3. to offer educational, economic, and legislative/regulatory policy options that would enable the government of Alberta to achieve sustainable water management futures.

A total of twenty-one participants from Alberta, other parts of Canada, the United States, England and Australian attended the workshop.

Because a broad, futures perspective on water policy was the main objective of the workshop, the ECA invited participants with varied backgrounds: geographers, ecologists, economists, lawyers, engineers, health care practitioners, and sociologists, among others. Participants included academics, consultants, administrators, and policy makers. All had applied their experience to water-related or environmental issues.

The workshop was facilitated by three persons from Environmental and Social Systems Analysts Ltd.(ESSA).

Workshop Output

Participants were asked to identify issues and concerns associated with the current and future management of water. Fifty issues and concerns were listed. Most fell into seven subject areas:

1. water rights and allocation
2. increasing need to adopt positions favourable to conservation ethics
3. provisions for the development of an integrated ecosystem approach

4. uncertainty and the need for adaptable management systems
5. planning for global change
6. institutional reform and satisfactory means of resolving interjurisdictional conflicts
7. public participation and stakeholder involvement

Within the open atmosphere for exchange of ideas provided by the workshop, several policy options to address these concerns were identified. No attempt was made to come to a workshop consensus on policy directions, nor was there an attempt to fit proposals into a total, complementary package. Altogether, the policy directions challenge Albertans to find a better way to a healthy environment as their economy develops.

Participants suggested the following policy directions:

- management of the demand side to encourage water conservation
- integrated land and water management
- reallocation of water rights
- education and public awareness programs
- co-management of water resources
- resolution of transboundary issues
- pricing of effluent discharges
- direct regulation to set permissible levels of water use for human purposes
- strengthening of environmental impact processes
- strengthening of enforcement activities
- planning for environmental uncertainty (global changes)

Reallocation of water rights, demand management, co-management, and planning for environmental uncertainty were priorities.

Reallocation of Water Resources

Participants suggested changes in current legislation to make water rights transferable. By attaching a time limitation on water rights, flexibility to meet future changes could be ensured. Also, time limitations would reinforce the attitude that access to water resources is a privilege.

Workshop participants leaned toward the establishment of a market for redistribution of water rights. Consideration was given to environmental needs within the market framework. The market would be available to redistribute water in excess of in-stream flow

needs, or endowments would be available for agencies to purchase water for conservation purposes.

Demand Management

Demand management was suggested as a means for conserving water. Water pricing, user charges for the development of infrastructure, and changes in standards and building codes are some ways of reducing demand. Regulations that set limits on water use, and effluent charges, were also considered.

Co-Management

Co-management was discussed in several different ways.

Ideally, all stakeholders would work together to develop a system of resource management. Several conditions were seen as desirable for successful co-management. They included roles clarification, development of conflict resolution, access to information, removal from direct political control, and education. Education would involve awareness of the importance of water for the survival of humans and other species, the consequences of changes to the environment, and the education of technical experts with interdisciplinary capabilities.

Co-management was also discussed within the context of multi-stakeholder negotiations as a way of developing compliance contracts. Improved and stronger enforcement should ultimately be available to ensure maintenance or improvements in environmental quality.

Participants also suggested that water managers work within geophysical boundaries (water basins). Since geophysical boundaries cross political and constitutional ones, joint forums and co-operation between jurisdictions would be necessary.

Co-management would virtually ensure integrated land and water planning, another policy direction supported by the participants. The idea would be to treat water as one part of the ecosystem. Effective integrated planning requires that the key environmental elements be identified, then managed as a whole.

Planning for Environmental Uncertainty

The workshop indicated strong support for co-management and integrated planning to ensure avoidance of irreversible decisions. Planning for variability and keeping flexibility

within management schemes were recommended. Climate change was seen as a great challenge for water management. Continued research into climate change is part of the solution.

The ECA workshop participants recognized obstacles to many of their suggestions, and recommended other participation methods, such as workshops or DELPHI exercises, to enable them to grapple with difficult policy areas.

APPENDIX A: Public Survey and Openhouse Questionnaires

During the first phase of the Water Management Policy and Legislation Review, the public was asked twice to respond to questionnaires.

A mail-out public survey was conducted. The results of this questionnaire and the survey methodology are explained in the "Summary of Public Survey" chapter.

A set of five questionnaires was made available to the public during the open houses and workshops. Each questionnaire corresponded to one of the following major issue areas of water management: Decision Making, Water Management Programs and Projects, Water Quality and Quantity, Allocation of Water Rights (Surface), Allocation of Water Rights (Groundwater). The results of the questionnaires are included in Appendix B.

A blank copy of the public survey questionnaire and a set the open house questionnaires follow.

WATER MANAGEMENT IN ALBERTA

CHALLENGES FOR THE FUTURE

Dear Householder:

Alberta Environment would appreciate your help in planning effective water management legislation. Management of Alberta's water supplies for homes, industries, agriculture, recreation and conservation cannot be taken for granted. Fifteen minutes of your time will make a significant contribution to our future.

The Government of Alberta is planning to review water management legislation in this province in order to ensure that our vital water resources are properly managed for future generations. You can help by responding to the attached questionnaire. Alberta Environment believes that public consultation is essential to development of water management legislation that responds to the needs of everyone in Alberta.

Your input will help provide an effective public involvement process that allows Albertans to have an opportunity to help create the best possible water legislation for now and for the foreseeable future.

Place your completed questionnaire in the enclosed prepaid envelope and drop it in the nearest mailbox, no later than September 6, 1991. All individual responses will be confidential. If you have any questions, comments, or wish further information on water use in Alberta, please call (toll-free) 1-800-661-5586. Thank you for your assistance. We hope you will continue to be involved.

HONOURABLE RALPH P. KLEIN
Minister

Alberta
ENVIRONMENT

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1. (Please check correct space) (a) I live: ___in northern Alberta (Edmonton or north of Edmonton).
___in central Alberta (between Calgary and Edmonton).
___in southern Alberta (Calgary or south of Calgary).

(b) I live: ___in a city.
___in a town or village.
___in a rural area.

2. Please indicate your response to the following questions about water management. Indicate your position by marking the appropriate number on the scale provided.
(E.g., 1 2 3 X 5)

(a) Compared to other issues facing government today, how **important** is the management of water in this province?	Not Important 1	2	3	4	Very Important 5
(b) How **familiar** are you with Alberta's water management legislation?	Not Familiar 1	2	3	4	Very Familiar 5
(c) How **urgent** do you think is it for the Alberta government to review water management legislation?	Not Urgent 1	2	3	4	Very Urgent 5
(d) How **concerned** are you about water management in Alberta?	Not Concerned 1	2	3	4	Very Concerned 5

3. How familiar are you with water management in this province? Please indicate your familiarity with each of the topics described by marking the appropriate box.

	I Am Adequately Informed	I Require More Information	I Am Not Interested
• The provincial government role in water management	☐	☐	☐
• The process of allocating water rights through licenses	☐	☐	☐
• The purpose of the Water Resources Act	☐	☐	☐
• How water management decisions are made	☐	☐	☐
• The relationship among federal, provincial, and municipal governments regarding water management	☐	☐	☐

	I Am Adequately Informed	I Require More Information	I Am Not Interested
• How groundwater and surface waters (lakes and rivers) are protected	☐	☐	☐
• How water management legislation is enforced	☐	☐	☐
• What kinds of water management methods are currently used in this province	☐	☐	☐
• How you can get involved in water management decisions	☐	☐	☐

4. How important are each of the following water management issues (now and in the future) in your opinion? **In the first column**, indicate how important each issue is now. **In the second column**, indicate whether the issue will become more important by the year 2001. (Please feel free to add other issues you feel are important.)

How important are each of the following issues?	Not Very Important				Very Important	Will This Issue Become More Important By 2001?	
• Involving the public in decision-making about water management	1	2	3	4	5	Yes	No
• Planning water allocation and use throughout the province	1	2	3	4	5	Yes	No
• Improving protection of rivers, lakes, and groundwater in Alberta	1	2	3	4	5	Yes	No
• Improving the process of allocating water to water users	1	2	3	4	5	Yes	No
• Improving cooperation among municipal, provincial, and federal governments regarding water management	1	2	3	4	5	Yes	No
• Improving public knowledge about water conservation	1	2	3	4	5	Yes	No
• Other issues you may wish to add							
_____	1	2	3	4	5	Yes	No
_____	1	2	3	4	5	Yes	No

5. The following statements describe possible positions regarding water management. Please indicate how strongly you agree with these positions on the scale provided.

	Strongly Disagree				Strongly Agree
• There is adequate water in this province for everyone, for the foreseeable future	1	2	3	4	5
• Water metering is an important conservation measure	1	2	3	4	5
• Water users should pay a price related to the quality and quantity of water they use	1	2	3	4	5
• Water should be allocated on a "first come/first serve" basis	1	2	3	4	5
• In some cases, water rights should be transferable from one person to another	1	2	3	4	5
• There is adequate enforcement of water legislation in this province	1	2	3	4	5

6. How interested are you in becoming involved in the review of water management policy and legislation in Alberta?

Not Interested				Very Interested
1	2	3	4	5

7. If you wished to actively participate in providing comments and direction on the future of water management in Alberta, which of the following methods would you use? (Please check the appropriate boxes.)

	Would Participate	Would Not Participate
• Attend community meetings hosted by Alberta Environment representatives	☐	☐
• Provide comments directly to Alberta Environment through correspondence, by using our toll-free telephone line (1-800-661-5586), and/or personally contacting government employees	☐	☐
• Personally contacting my Member of the Legislative Assembly	☐	☐
• Respond to surveys received at my home, included in newspapers or through radio and television	☐	☐
• Read media reports and discussing the issues with family and friends	☐	☐

Please include any other methods that would encourage you to participate in a review of water management in Alberta.

- _____
- _____

8. What do you want most from a public involvement opportunity? Please indicate why you prefer certain methods of public involvement (i.e., public involvement options from the previous question). Please rank your **three** most important reasons. (eg., #1, #2, #3)

- _____Convenient location
- _____Will provide an opportunity to hear other opinions from my community
- _____Will allow me to participate in a full discussion of water use and management topics
- _____Will provide an opportunity to better understand water use and management in Alberta
- _____Will allow me to have the greatest impact upon decisions
- _____Will be interesting and fun
- _____Will take the least time

Other potential benefits you see:

- _____
- _____

9. Do you have any advice for the Alberta Government that would assist in water resources management policy and legislation review related to public involvement or water use?

- Public Involvement

_____
_____
_____
_____

- Water Use

_____
_____
_____
_____

Thank you for taking the time to complete and return this questionnaire in the enclosed, pre-paid envelope, by September 6, 1991 to the Equus Consulting Group. They will be tabulating the results of the survey on behalf of Alberta Environment and the Alberta Water Resources Commission.

Your assistance in providing the following, confidential information would be appreciated.

(a) Gender of the respondent:

___Male

___Female

(b) Age of respondent:

___15 - 19 years of age

___20 - 24 years of age

___25 - 34 years of age

___35 - 44 years of age

___45 - 54 years of age

___55 - 64 years of age

___65 years of age and over

WATER MANAGEMENT POLICY & LEGISLATION REVIEW

TOPIC AREA:

Water Resources Decision Making Process

#1 What are your comments or concerns regarding the Water Resources Decision Making Process?

_____

_____

_____

_____

_____

_____

#2 Please tell us of any specific recommendations you have with regard to this topic area.

_____

_____

_____

_____

_____

_____

over....

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Water Resources Decision Making Process

We want your opinion. Listed below are a number of options that could be considered in the policy and legislation review process. Tell us what you think about the following ideas in the spaces provided. Please add any other options you feel should be considered.

POSSIBLE POLICY OPTION	AGREE	DISAGREE	NO OPINION
· Prepare river basin plans for all major river basins and base water allocation and management decisions on those plans.	☐	☐	☐
· Base water management decisions on achieving multiple uses of water resources.	☐	☐	☐
· Provide the opportunity for all interested members of the public to provide input to all water management decisions.	☐	☐	☐
· Solicit input on water management decisions from affected public and stakeholders only.	☐	☐	☐
· Require the advertisement of all water licence applications without exceptions.	☐	☐	☐
· Share the responsibility for water management decision making with other levels of government especially local authorities.	☐	☐	☐
· Link land use planning carried out by other agencies directly to river basin planning.	☐	☐	☐

MAIL RETURN TO:

ALBERTA ENVIRONMENT,
3rd Floor, Oxbridge Place,
9820 - 106th Street,
Edmonton, Alberta T5K 2J6

FOR FURTHER INFORMATION CALL TOLL-FREE:

1-800-661-5586

WATER MANAGEMENT POLICY & LEGISLATION REVIEW

TOPIC AREA:

WATER QUALITY AND QUANTITY

#1 **What are your comments or concerns regarding the issue of Water Quality and Quantity integration?**

#2 **Please tell us of any specific recommendations you have with regard to this topic area.**

over....

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WATER QUALITY AND QUANTITY

We want your opinion. Listed below are a number of options that could be considered in the policy and legislation review process. Tell us what you think about the following ideas in the spaces provided. Please add any other options you feel should be considered.

POSSIBLE POLICY OPTION	AGREE	DISAGREE	NO OPINION
· Require water licences to demonstrate "no impact" on the quality of the water body they are withdrawing water from.	☐	☐	☐
· Designate the capacity of a stream to assimilate waste as a volume of water which cannot be allocated to consumptive users.	☐	☐	☐
· Designate rivers or river reaches to specific uses.	☐	☐	☐
· Establish instream flow requirements for all major rivers and streams.	☐	☐	☐
· Licence instream flow volumes to instream uses (i.e. fish habitat, recreation).	☐	☐	☐
· Implement restrictions on land uses in nearby water bodies.	☐	☐	☐

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FOR FURTHER INFORMATION CALL TOLL-FREE:

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WATER MANAGEMENT POLICY & LEGISLATION REVIEW

TOPIC AREA:

ALLOCATION OF WATER (GROUNDWATER)

#1 What are your comments or concerns regarding the issue of the allocation of Water Rights from groundwater sources?

#2 Please tell us of any specific recommendations you have with regard to this topic area.

over....

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ALLOCATION OF WATER (GROUNDWATER)

We want your opinion. Listed below are a number of options that could be considered in the policy and legislation review process. Tell us what you think about the following ideas in the spaces provided. Please add any other options you feel should be considered.

POSSIBLE POLICY OPTION	AGREE	DISAGREE	NO OPINION
· Limit the use of potable groundwater for purposes other than domestic or municipal (i.e., oil injection, irrigation)	☐	☐	☐
· Develop guidelines for the protection of groundwater recharge areas.	☐	☐	☐
· Establish the rights of domestic groundwater users in law.	☐	☐	☐
· Expand groundwater data collection programs			
- at government expense	☐	☐	☐
- at groundwater users' expense.	☐	☐	☐
· Require groundwater users to demonstrate that their withdrawal will not affect the quality and quantity of the aquifer.	☐	☐	☐
· Expand recycling requirements for industrial groundwater users.	☐	☐	☐

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Edmonton, Alberta T5K 2J6

FOR FURTHER INFORMATION CALL TOLL-FREE:

1-800-661-5586

WATER MANAGEMENT POLICY & LEGISLATION REVIEW

TOPIC AREA:

ALLOCATION OF WATER (SURFACE)

#1 What are your comments or concerns regarding the issue of the allocation of water rights from surface water sources?

#2 Please tell us of any specific recommendations you have with regard to this topic area.

over....

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ALLOCATION OF WATER (SURFACE)

We want your opinion. Listed below are a number of options that could be considered in the policy and legislation review process. Tell us what you think about the following ideas in the spaces provided. Please add any other options you feel should be considered.

POSSIBLE POLICY OPTION	AGREE	DISAGREE	NO OPINION
· Allow the sale or transfer of water rights between users.	☐	☐	☐
· Issue water licences for a fixed term with allowance for periodic review and renewal.	☐	☐	☐
· Require all water licencees to monitor their water use volumes.	☐	☐	☐
· Provide a specific appeal process for applicants who are refused a licence or to those objecting to an approved licence.	☐	☐	☐
· Reserve a minimum flow level in all rivers and lakes which cannot be allocated to users.	☐	☐	☐
· Create incentives for users to conserve water (i.e., water pricing, water metering recycling requirements).	☐	☐	☐
· Require that water licences are registered on the land title to which they are attached.	☐	☐	☐
· Impose stricter enforcement measures such as those in the proposed Alberta Environmental Protection and Enhancement Act. (Fines up to $1 million or up to 2 years in jail).	☐	☐	☐

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CALL TOLL-FREE:

1-800-661-5586

WATER MANAGEMENT POLICY & LEGISLATION REVIEW

TOPIC AREA:

WATER MANAGEMENT PROGRAMS & PROJECTS

#1 What are your comments or concerns regarding the issue of Water Management Programs & Projects?

#2 Please tell us of any specific recommendations you have with regard to this topic area.

over....

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WATER MANAGEMENT PROGRAMS & PROJECTS

We want your opinion. Listed below are a number of options that could be considered in the policy and legislation review process. Tell us what you think about the following ideas in the spaces provided. Please add any other options you feel should be considered.

POSSIBLE POLICY OPTION	AGREE	DISAGREE	NO OPINION
· Transfer the responsibility for ownership, operation and maintenance of water management projects to local authorities.	☐	☐	☐
· Distribute a greater portion of the costs of water management projects to direct beneficiaries of those projects ("user pay concept").	☐	☐	☐
· Provide 100% provincial funding for projects which provide benefit to a large number of Albertans.	☐	☐	☐
· Investigate non-structural solutations to damages caused by flooding, erosion, or drought.	☐	☐	☐
· Expand programs of technical and financial assistance to landowners and local authorities for dealing with water related problems.	☐	☐	☐
· Require all proponents of water management projects to submit Environmental Impact Assessments on their proposals.	☐	☐	☐
· Expand programs of active lake management (i.e., lake quality enhancement, lake level stabilization and augmentation).	☐	☐	☐

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MAIL RETURN TO:

ALBERTA ENVIRONMENT,
3rd Floor, Oxbridge Place,
9820 - 106th Street,
Edmonton, Alberta T5K 2J6

FOR FURTHER INFORMATION CALL TOLL-FREE:

1-800-661-5586

APPENDIX B: Results of Openhouse Questionnaires

During the openhouses and workshops held in the fall of 1991, participants were encouraged to complete a set of five questionnaires. Copies of these questionnaires are included in Appendix A.

Each questionnaire corresponded to one of the following major issue areas of water management: Decision Making, Water Management Programs and Projects, Water Quality and Quantity, Allocation of Water Rights (Surface), Allocation of Water Rights (Groundwater).

Each questionnaire was divided into two sections. The first section for concerns or recommendations regarding the topic area. These comments are included in the summary of public comments. The second section asked for agreement, disagreement or no opinion on suggested policy options.

The results of the second section of the questionnaire follow. Please note that neither the columns or the rows will tally to the same number because often respondents did not complete all questions on the forms.

TOPIC AREA: ALLOCATION OF WATER (SURFACE)

POSSIBLE POLICY OPTION	Agree	Disagree	No Opinion
All the sale or transfer of water rights between users	25 (32%)	48 (62%)	5 (6%)
Issue water licences for a fixed term with allowance for periodic review and renewal	68 (88%)	8 (10%)	1 (1%)
Require all water licencees to monitor their water use volumes	67 (87%)	8 (10%)	2 (3%)
Provide a specific appeal process for applicants who are refused a licence or to those objecting to an approved licence	73 (93%)	3 (4%)	3 (4%)
Reserve a minimum flow level in all rivers and lakes which cannot be allocated to users	72 (90%)	4 (5%)	4 (5%)
Create incentives for users to conserve water (i.e., water pricing, water metering recycling requirements)	66 (84%)	10 (13%)	3 (4%)
Require that water licences are registered on the land atitle to which they are attached	53 (66%)	13 (16%)	14 (18%)
Impose stricter enforcement measures such as those in the proposed Alberta Environmental Protection and Enhancement Act (Fines up to $1 million or up to 2 years in jail).	63 (81%)	9 (12%)	6 (8%)

TOPIC AREA: ALLOCATION OF WATER (GROUNDWATER)

POSSIBLE POLICY OPTION	Agree	Disagree	No Opinion
Limit the use of potable groundwater for purposes other than domestic or municipal (i.e. oil injection, irrigation)	55 (85%)	9 (14%)	1 (2%)
Develop guidelines for the protection of groundwater recharge areas	64 (89%)	6 (8%)	2 (3%)
Establish the rights of domestic groundwater users in law	44 (71%)	12 (19%)	6 (10%)
Expand groundwater data collection programs at government expense	37 (67%)	9 (16%)	9 (16%)
Expand groundwater data collection programs at groundwater user's expense	37 (66%)	8 (14%)	11 (20%)
Require groundwater users to demonstrate that their withdrawal will not affect the quality and quantity of the aquifer	50 (80%)	2 (3%)	8 (13%)
Expand recycling requirements for industrial groundwater users	57 (89%)	2 (3%)	5 (8%)

TOPIC AREA: WATER MANAGEMENT PROGRAM AND PROJECTS

POSSIBLE POLICY OPTION	Agree	Disagree	No Opinion
Transfer of the responsibility for ownership, operation and maintenance of water management projects to local authorities	13 (22%)	43 (73%)	3 (5%)
Distribute a greater portion of the costs of water management projects to direct beneficiaries of those projects ("user pay concept").	52 (85%)	7 (11%)	3 (5%)
Provide 100% provincial funding for projects which provide benefit to a large number of Albertans	30 (53%)	24 (42%)	3 (5%)
Investigate non-structural solutions to damages caused by flooding, erosion, or drought	53 (90%)	2 (3%)	4 (7%)
Expand programs of technical and financial assistance to landowners and local authorities for dealing with water related problems	37 (69%)	17 (30%)	3 (5%)
Require all proponents of water management projects to submit Enivronmental Impact Assessments on their proposals	52 (90%)	5 (9%)	1 (2%)
Expand programs of active lake management (i.e. lake quality enhancement, lake level stabilization and augmentation)	36 (63%)	18 (32%)	3 (5%)

TOPIC AREA: WATER QUALITY AND QUANTITY

POSSIBLE POLICY OPTION	Agree	Disagree	No Opinion
Require water licences to demonstrate "non impact" on the quality of the water body they are withdrawing water from	51 (77%)	9 (14%)	6 (9%)
Designate the capacity of a stream to assimilate waste as a volume of water which cannot be allocated to consumptive users	47 (80%)	7 (12%)	5 (8%)
Designate rivers or river reaches to specific uses	37 (61%)	17 (28%)	7 (11%)
Establish instream flow requirements for all major rivers and streams	57 (89%)	4 (6%)	3 (5%)
Licence instream flow volumes to instream uses (i.e., fish habitat, recreation)	49 (79%)	7 (11%)	6 (10%)
Implement restrictions on land uses in nearby water bodies	47 (81%)	5 (9%)	6 (10%)

TOPIC AREA: WATER RESOURCES DECISION MAKING PROCESS

POSSIBLE POLICY OPTION	Agree	Disagree	No Opinion
Prepare river basin plans for all major river basins and base water allocation and management decisions on those plans	50 (85%)	6 (10%)	3 (5%)
Base water management decisions on achieving multiple uses of water resources	49 (84%)	5 (9%)	4 (7%)
Provide the opportunity for all interested members of the public to provide input to all water management decisions	49 (82%)	9 (15%)	2 (3%)
Solict input on water management decisions form affected public and stakeholders only	16 (26%)	41 (67%)	4 (7%)
Require the advertisement of all water licence applciations without exceptions	47 (78%)	8 (13%)	5 (8%)
Share the responsibility for water management decision making with other levels of government especially local authorities	43 (73%)	14 (24%)	2 (3%)
Link land use planning carried out by other agencies directly to river basin planning	54 (92%)	1 (2%)	4 (7%)

APPENDIX C: Location, Dates and Attendance of Public Workshops

All weekday openhouses were held from 2:00 p.m. to 7:00 p.m. and workshops went from 7:00 p.m. until 10:00 p.m. Saturday openhouses were held from 11:00 a.m. to 2:00 p.m. and the workshops went from 2:00 p.m. until 5:00 p.m.

LOCATION	DATE, 1991	Openhouse	Workshop
Vermillion, Elk's Hall	Oct 30	53	35
Red Deer, Red Deer Lodge	Nov 1	50	45
Lac La Biche, Jubilee Hall	Nov 7	29	17
Ft. McMurray, McDonald Island Recreation Centre	Nov 8	25	17
Hanna, Community Centre	Nov 14	35	36
Medicine Hat, Quality Inn	Nov 15	79	57
Lethbridge, Sandman Inn	Nov 20	38	69
Claresholm, Community Centre	Nov 21	35	30
Calgary, Marlborough Inn	Nov 22	86	84
Calgary, Marlborough Inn	Nov 23	56	73
Whitecourt, Whitecourt Motor Inn	Nov 26	16	8
Drayton Valley, Legion Hall	Nov 27	18	27
Edmonton, Radisson	Nov 29	60	80
Edmonton, Radisson	Nov 30	21	51
High Level, Legion Hall	Dec 3	27	23
Grande Prairie, Golden Inn	Dec 4	29	27
High Prairie, Elks Hall	Dec 5	24	19
Peace River, Conference Centre	Dec 6	22	19
Hanna, Community Centre	Dec 11	42	61
TOTAL		735	778

Appendix D: List of Individuals / Groups That Made Submissions

The following individuals and groups made written submissions to Alberta Environment regarding the Water Management Policy and Legislation Review. The list includes all individuals/groups who made submissions as of the drafting of this document. The submissions received after the December 31, 1991 deadline may not be summarized in this document, but are being considered in the preparation of policy and legislation.

Albert Power
Alberta Fish & Game Association
Alberta Lake Management Society
Alberta Urban & Municipalities Association
Alberta Cattle Commission
Alberta Forest Products Association
Alberta Wilderness Association
Alberta Irrigation Projects Association
Alberta Environmental Network
Alberta League for Environmental Responsible Tourism
Angle, R. Petty
Appleton, Ken
Arrison, Norm
Barlott Consulting Limited
Battle River Regional Planning Commission
Beairsto Stewart Wier Engineering Ltd.
Beaver Lake Band
Belicek, Joseph
Bell, Doug
Bentley, Dr. Fred
Bernard, Monica
Blake, Tony
Bow Waters Canoe Club
Bow Island, Town of
Brink, Roy
Brown, Bill
Burton, Ross and Gail
Calgary Chamber of Commerce
Calgary, City of
Calgary Regional Planning Commission
Cameron, David & Eva
Canadian Hydro Developers Incorporated
Canadian Federation of University Women - Edmonton
Canadian Nature Federation
Canadian Petroleum Products Institute
Canadian Petroleum Association
Casey, Richard
Chipchura, Dave
Chudobiak, J.M.
Collicott, Mayor Betty
Collier, Barbara
Collins, Michael
Cottonwood Consultants Limited
Coulter, R.L.
County of Forty Mile #8
County of Paint Earth No. 18
County of Lethbridge No. 26
County of Grande Prairie No. 1
Crane, K.G.
Cygnet Development Ltd.
David Bromley Engineering
DeJong, Freda
Dickson Power
Drayton Valley, Town of - Regional Industry Groundwater Use Policy Review Committee

Ducks Unlimited - Grande Prairie
Ducks Unlimited - Edmonton
Eastern Irrigation District
Edmonton, City of
Edmonton Power
Ekstrom, Allen & Frances
Environment & Energy Development Society
Environmental Research & Studies Centre, University of Alberta
Environmental Law Centre
Father Jan School
Federation of Alberta Naturalists
Ferner, Steven
Fort McMurray Environmental Association
Freimark, Norman
Friends of the Oldman River
Gardner, Rob
Giesbrecht, Cathy
Gladstone Contracting Ltd.
Gongos, Gerald
Grad Walker Resources Ltd.
Graham, Gordon
Grote, Manfred W.
Gunderson, Virginia
Hancock, Philip
Hanson, Ed
Hanson, Ray
Hargrave Ranching
Harris, Ray
Harrison, Brent
Hart, John
Haukedal, Gordon & Donna
Hein, Leonard
Helmer, Gray
Highwood Restoration and Conservation Association
Hutterian Brethern Church of Elkwater
Ibach, Greg
Improvement District No. 23
Improvement District No. 21
Irwin, Douglas
Kathan, W.
Kavanagh, Mark
Kesler, Lorence
Kiteley, Joanne
Kloberdanz, John & Fay
Kostuch, Martha
Krippl, M.
Krotki, Dr. Karol
Kure, Dr. Elmer
Kurpjuweit, Lavern
La Crete East Flood Control Committee
Lac La Biche, Town of
Lac La Biche Regional Fisheries Advisory Committee
Langemann, Ralph
Lapko, Alexandra
Lethbridge Northern Irrigation District
Liivam, Mark
Lodewyk, Sid
Lorie, Keith
Luck, Stephen
Lund, Mark
Lyle, May
Lysons, Keith
Manz, Ed
McCleary, Richard
MacKenzie Regional Planning Commission
McKenzie, Vivian
Medicine Hat, City of
Miller, Neil
Mitchell, Grant - Liberal MLA Edmonton/ Meadowlark
Monkman, Jack
Municipal District of Cypress
Murphy, A.
O'Riordan, Maxine

Padget, Bernard
Palmater, Tim
Parker, David J.
Parkinson/Jackson
Peterson, Ken
Peace River, Town of
Pearson, Raymond & Leila
Peel, Don
Pembina Institute for Appropriate Development
Poch, Ronald D.
Pochmursky A.J.
Pokorney, John
Poulsen, Ken
Prairie Association for Water Management
Prepas, Dr. E
Rakach, Calvin A.
Ranger Slave Lake Pulp Corporation
Red Deer Regional Planning Commission
Reed, Jim
Rew, Dorene
Riddett, Robert
Ross Creek Irrigation District
Rostron, Catherine
Samiroden, Wallie
Saskatchewan Water Corporation
Shaw, Gordon
Short Grass Ranches Limited
Shute, Walter
Sierra Club of Alberta
Simmons, Alexis
Soil & Water Conservation Society
Spady, Allen
Spengler, Trudy
Spring Creek Colony
St. May River Irrigation District
Stewart, Lawrence
Stoyke, Heidi
Stromstedt, Floyd
Sucker Creek Band
Taber Irrigation District
Taylor, Doug
Thomas, Arthur
Trans Alta Utilities Corporation
Trout Unlimited - Calgary Chapter
Trout Unlimited - Edmonton Chapter
Trout Unlimited - Bow River Chapter
Tyler, Chris
Uhryn, William S.
University Women's Club of Calgary
University of Calgary/Environmental Law Group
Vetsch, Lorraine
Vincent, Pat
Virtue, R.
W.G. Milne Architects Ltd.
Ward, Peter Maxwell
Welsh, Diane
Westerlund, Joyce
Western Stockgrowers Association
Western Environmental & Social Trends Inc.
Wianecki, Karen
Wolf, R.E.
Yakiwchuk, Albert
Yellowhead Regional Planning Commission
Young, David
Zybach, Paula

APPENDIX E: Reference List

The following material related to the Water Management Policy and Legislation Review is available upon request from Alberta Environment by calling toll free 1-800-661-5586.

Water Management In Alberta - Challenges For The Future (July, 1991)

An overview of the Water Management Policy and Legislation Review process that outlines the key issues to be addressed.

Background Papers - 12 Volumes (September, 1991)

Volume 1	· Alberta's Water Resource
Volume 2	· History of Water Management Legislation in Alberta · Water Rights · Enforcement
Volume 3	· Aboriginal Water Issues
Volume 4	· Public Involvement · Cooperating with Other Governments
Volume 5	· Water Resources Planning · Instream Flow Needs · Water Quality/Quantity Relationship · Lake Management
Volume 6	· Water Conservation · Water Pricing
Volume 7	· Groundwater Management

Volume 8	· Water Management Projects · Operation and Maintenance of Water Management Projects · Water For Irrigation · Hydroelectric Development
Volume 9	· Environmental Impact Assessment
Volume 10	· Flood Damage Reduction
Volume 11	· Role of the Alberta Water Resources Commission in Water Management
Volume 12	· Wetlands: Values and Options

Water Management Policy and Legislation Review - Public Survey (October, 1991)

- A public survey conducted by the random mailing of questionnaires to households in Alberta asking occupants what water management issues were important to them. An overview of the results is presented in the this document's chapter "Summary of Public Survey." A complete summary of the survey is available.

Alberta Water Policy Futures Workshop (December, 1991)

- A workshop, hosted by the Environment Council of Alberta, brought together national and international experts in water management to discuss water related issues that affect Alberta. An overview of the workshop is available in this document's chapter "Summary Of Water Policy Futures Workshop" Workshop proceedings are available.

The Water Management Policy and Legislation Review - Public Submissions (March, 1991)

A complete set of the submissions made to Alberta Environment regarding the Water Management Policy and Legislation Review. The complete set of submissions can be reviewed at Alberta Environment's library (427-5870). Due to the size of the document, complete sets of public submissions will not be produced for distribution. If you are interested in a receiving a copy of one or two submissions, please call Alberta Environment at 1-800-661-5586.